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The

BLUE JAY

A JOURNAL OF NATURAL HISTORY AND CONSERVATION
FOR SASKATCHEWAN AND ADJACENT REGIONS

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Harvest near Last Mountain Lake,
Saskatchewan, September 1965

Photo by Robert R. Taylor

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Regina, Saskatchewan

THE RESPONSIBILITY OF MEMBERSHIP IN THE SASKATCHEWAN NATURAL HISTORY SOCIETY

Since my return to Saskatchewan from travelling widely last year in other countries, I have been thinking seriously about the fortunate position enjoyed by Canadians. We are, if we consider our natural resources in relation to our population, the richest people in the world. We have a beautiful and still relatively unspoiled country. But are we sufficiently proud of Canada, and are we facing our responsibility to protect Canadian wonders so that future generations may enjoy them? As editor of the *Blue Jay* I ask myself how members of the S.N.H.S. can increase their knowledge of the distinctive beauties and values of our natural resources at the same time as they assume a more active responsibility for conservation.

In our magazine we can print educational and thought-provoking articles like those of Dr. E. Peterson on ecological features of our 1966 summer meeting area (pages 102-108) and Dr. L. Murray on Saskatchewan sanctuaries (pages 110-120). We can supply specific information e.g. population changes in the pelican and other colonial birds as reported by Sanderson and by Houston (pages 121-123). In addition to articles and notes published in our quarterly *Blue Jay* notes, news items and questions can appear in our quarterly Newsletter. We have also a special publication series for longer articles of more permanent value, and we can give financial assistance to the publication of other good natural history contributions.

But we must be prepared to follow up articles such as these with suitable activity. As a society, we can give support to other organizations with similar aims. For example, through the Nature Conservancy of Canada we can aid in the purchase of areas with natural history interest or value in any part of Canada. There are also practical activities in which we can engage individually. For example, do you know any spot or plant or animal in your area which is in special need of protection? If so report it to the *Blue Jay* or Newsletter so that others may know of the need and be given the opportunity to help in its protection.

By belonging to a local natural history society, many people, in addition to reading and writing, share natural history enthusiasms and problems verbally. Such local societies hold regular monthly meetings featuring films and guest speakers, and have special field trip meetings where members share in the thrills of bird migration or visit areas of natural history interest. We can increase our knowledge and understanding of nature by joining a group. In this connection we are pleased to learn that a local society has recently been organized in Swift Current. Best wishes to members there. Other groups meet in Regina, Saskatoon, Moose Jaw, Prince Albert and in the larger cities of Manitoba and Alberta. If you are within driving distance of any of these cities, you should visit one of the meetings and consider joining the group.

The S.N.H.S. itself has two regular annual meetings. The June meeting is informal and provides opportunity for members of similar interests to get together and exchange knowledge and views. The October meeting is the official business meeting of the society. The treasurer's report is open for inspection, elections are held, resolutions are considered, and discussions of all kinds are held. All members are welcome to attend these two meetings. The next one will be held in the Museum of Natural History in Regina, October 15, 1966. Please come.

Currently, the Society's main project in practical conservation concerns the leasing of land for the prairie dogs. To help meet expenses for this and other possible conservation projects we have a special Sanctuary Fund. When you renew your membership in the Society, consider including a donation for the Sanctuary Fund. Receipts for income tax purposes (page 156) will be issued.

As members of S.N.H.S. we not only show our interest in Natural history in Saskatchewan but also link ourselves with people all over the world who are increasingly aware that we must act now if we hope to save any natural beauties for the future. Be an active member! Help increase our membership.

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SOME ECOLOGICAL FEATURES OF THE ROCANVILLE - ST. LAZARE AREA

by **Everett Peterson**, University of Saskatchewan, Regina

Field trips during the 1966 Annual Summer Meeting of the Saskatchewan Natural History Society revealed a remarkable diversity of habitats in the area from St. Lazare, Manitoba, westward to Rat Lake and Scissors Creek, near Rocanville, Saskatchewan (Figure 1). The purpose of this article is to record some of the conspicuous ecological relationships between geological parent materials, vegetation, animals, and humans in this area.

An ecological description may stress one or all of three general kinds of processes: (1) inter-relationships between living things and their environment; (2) inter-relationships between the living things themselves (for example, competition between two species of birds for territorial rights during the nesting season); or (3) inter-relationships between particular environmental factors. To bring this complex web of inter-relationships to a level that can be comprehended by the human mind, ecologists try to visualize each natural community as the result of five factors: *parent material* (the original rocks or weathered material of an area); *topography* (relief or physiography); *climate* (in either the broad sense, such as 'the climate of southern Saskatchewan', or a narrow sense such as the climate of a north slope and a south slope, or even on a minor scale such as the upper versus the lower sides of a decaying log on the forest floor); *organisms* (all living things); and *time* (the effects of historical events, such as burning or clearing for agriculture). These factors do not act individually in their control of an ecological community. They exert a combined or integrated influence over a period of time. Yet it is sometimes possible to pinpoint one of these factors as the dominant influence on the community. Examples from the Rocanville - St. Lazare area are presented below to

show how these five factors may act to produce a particular landscape with a distinct community. All examples are from the block of land that lies north of Welwyn and between the St. Lazare and Rat Lake 1966 field trip sites (Figure 1).

Let us begin by imagining that this block of ten townships is a flat, featureless plain supporting no plants, humans or other animals. We can then examine the present landscapes and plant and animal communities in terms of how the five major factors have influenced this featureless plain. The reason for starting with an imaginary ecological void is that most pre-glacial features were obliterated by the forces of glaciation, and analysis of today's landscapes in this area can ignore, or assume to be featureless, that which existed in pre-glacial times. We know that there were living things present in Saskatchewan long before the last major glaciation and there is also evidence that the topography in the Rocanville area was not a featureless plain before glaciation. For instance, an ancestral river flowed towards the southeast, with its channel near the present geographic position of Rocanville but in a different course than the present Qu'Appelle and Assiniboine Rivers (McCrossan and Glaister, 1966). But with the exception of some small outcrops of Upper Cretaceous shale (about 75 million years old) along Scissors Creek, there was general burying of the pre-glacial landscape in the Rocanville area. Thus, our imaginary plain dates back to about 10,200 years ago when the last minor re-advance of ice is thought to have covered the Rocanville area (Christiansen 1965).

Parent Materials

Glaciation in the Rocanville - St. Lazare area left behind several different kinds of parent materials, four

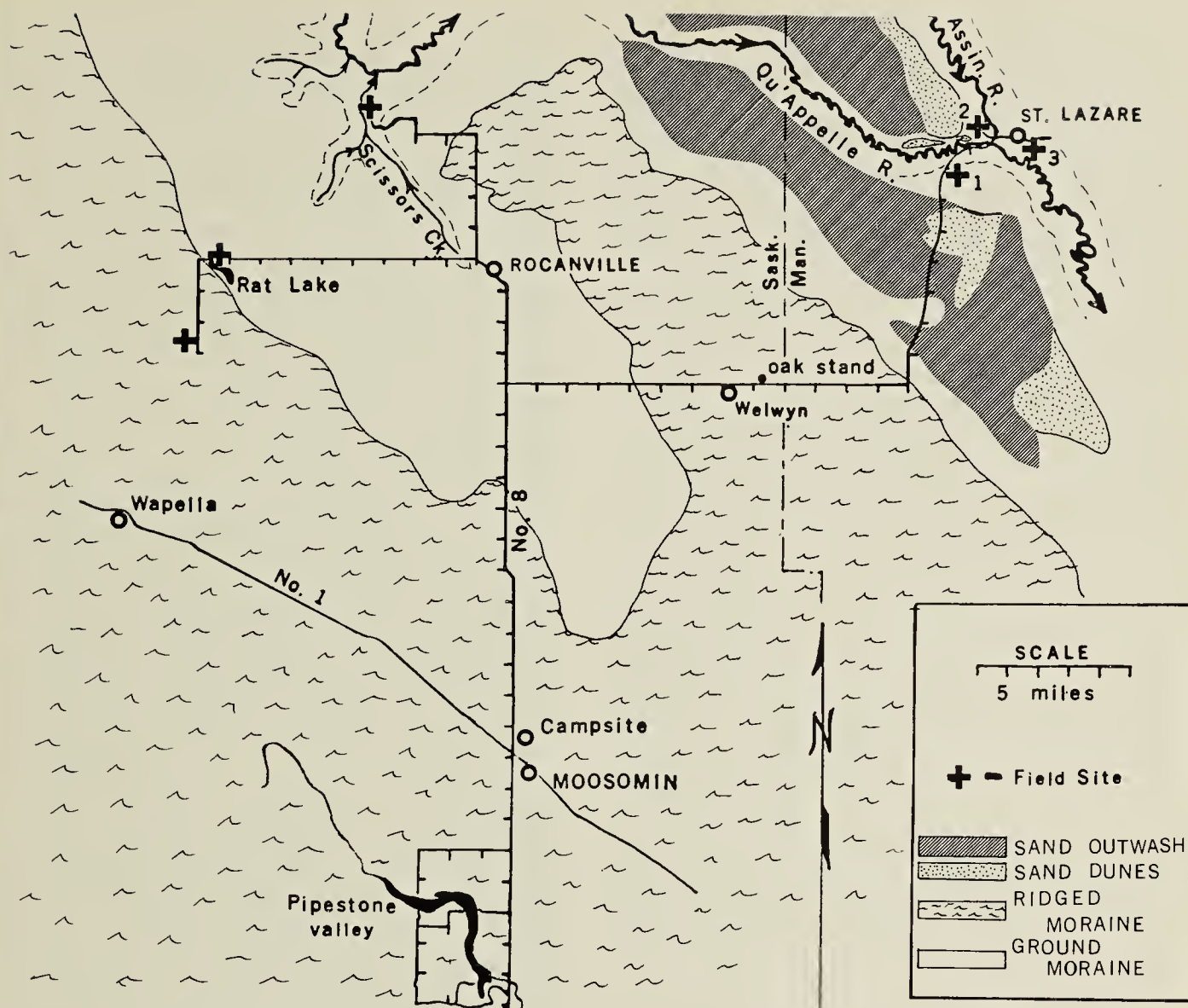


FIGURE 1—Rocanville-St. Lazare area, showing locations of 1966 Annual Summer Meeting field trip sites. Major subdivisions of parent material are from the map of surficial geology by Klassen (1965).

of which are shown on the map in Figure 1. Rocanville is located on an area of relatively flat morainal material that was deposited beneath the last ice-sheet (ground moraine). To the southwest, south and east of Rocanville is a large area of ridged moraine which is partly composed of material that was pushed up in front of the ice rather than being overridden by ice as in the case of ground moraine.

The sandy outwash plain near St. Lazare forms a striking contrast with the ice-deposited parent materials to the west. This large area of sand is partly a result of deposition by the major meltwater channel that drained a glacial lake in the Saltcoats-Yorkton area. Along the eastern edge of this water-deposited sand there has been movement of the sand by wind and

formation of dunes (Figure 1).

The distinction between ground moraine and ridged moraine is not so much a difference of parent material as it is of topography. Some effects of these differences in topography are discussed in the next section. Parent materials of both kinds of moraine bear hardwood forests of aspen and oak, in the absence of agricultural clearing. In contrast, the sand outwash and sand dune areas support only shrub, grass and herb communities. The large area of sand prairie, west of the confluence of the Qu'Appelle and Assiniboine Rivers, supports the following distinctive plant species: Creeping Juniper, Sand Cherry, Bearberry and several lichens (*Cetraria islandica*, *Cladonia uncialis* and *Cladonia alpestris*). Local concentrations of wolf-willow and river birch occur

where the outwash sand has been re-worked by wind. All of these species are absent or rare on the morainal areas. Aspen communities with their distinctive plant and animal components (Bird, 1961) flank the open sandy areas, but have not yet succeeded in invading much of this particular parent material. The addition of these two very distinct parent materials (moraine versus outwash deposits) to our assumed featureless plain has had another human ecological effect. A map of population density in this area (Atlas of Canada, 1957, Plate 48) reveals a density of one to four persons per square mile on an area that coincides with the outwash sands. Surrounding parent materials support four to ten persons per square mile, with up to twenty persons per square mile around Wapella and from twenty to forty per square mile just southeast of Moosomin. These figures reveal the magnitude of economic and ecologic differences brought about by varied parent materials.

Another distinctive substrate in this

area is the recently-deposited alluvial material on the floodplains of the Qu'Appelle and Assiniboine Rivers. This water-deposited parent material forms the special habitat for westward extension of eastern species such as American Elm, Green Ash and Manitoba Maple (Fowells, 1965). However, topography is also a factor in the control of this particular community of organisms.

Topography

The most conspicuous topographic features of the Rocanville-St. Lazare area are the broad valleys of the Qu'Appelle and Assiniboine Rivers (Figure 2). Erosion of the landscape by these deep valleys has greatly increased the number of habitats available for plants and animals over what would have been possible on the hypothetical flat plain. As long as topographic differences are a result of parent material differences, we are not really introducing a new ecological variable. In some parts of this particular study area we do, in fact, find that the topography is a direct result of different kinds of parent



FIGURE 2—View westward from St. Lazare, Manitoba. The confluence of the Qu'Appelle and Assiniboine Rivers, although not visible, is located near the centre of the photograph and the valley of the Qu'Appelle extends upstream into the distance at the right of the picture. Note floodplain terraces accentuated by snow patterns in centre of photograph, and scattered oaks on the southwest-facing slope in the foreground.

material. For example, between Rat Lake and Wapella the ridges are from 10 to 25 feet high and there is strong alignment of depressions and ridges in a southeast-northwest direction. These topographic features of the ridged moraine contrast sharply with the subdued topography of the ground moraine around Rocanville. Further variations are shown by the ridged moraine that lies east of Rocanville. Here the ridges are very gently undulating and their general flattening is likely a result of erosion by glacial meltwater that flowed eastward from the Rocanville ice-lobe into the meltwater channel that appears in Figure 1 between the ridged moraine and the sandy outwash plain (Klassen, 1965). These examples show how two of the five major factors may act jointly to produce a particular effect on the landscape.

In contrast to the above examples of coincidence between topography and parent materials, there are also examples of topography that have developed independently of parent materials. The glacial spillway of the Qu'Appelle River, for instance, exposes a number of different parent materials on its side-slopes. Along the upper reaches of this river (e.g. north of Regina and upstream from there) the general topographic effect is for north-facing slopes to be forested with south-facing slopes supporting trees only in protected ravines or wetter depressions. Progressing eastward the amount of available moisture increases, probably as a result of a more favourable balance between rainfall and evaporation. Thus, near the Manitoba - Saskatchewan border the river valley is potentially forested on both north-facing and south-facing slopes. For example, at field site No. 3 (Figure 1) even the warmest and driest slope (southwest-facing) supports an attractive forest of aspen and oak. In contrast, on the west side of St. Lazare (field site No. 2 in Figure 1) where the south-facing slope of the valley cuts through sands and gravels of the outwash plain there are no forested habitats. Thus, the excessive drainage of the outwash

parent material has counteracted the general tendency for south-facing slopes to be forested at the lower end of the Qu'Appelle Valley. These examples show how several different ecological controls may act jointly to produce a given effect. In this case of the Qu'Appelle Valley, we started with the assumption that topography and microclimatic differences associated with topography are basic reasons for the differences in the amount of forest habitat on north and south slopes of the upper Qu'Appelle Valley; then as we progress eastward, a climatic influence is observable with an increasing abundance of forest habitat on all slopes; thirdly, we find that these general topographic and climatic controls may be locally disrupted by strong parent material differences. The analysis of inter-relationships such as these is an important part of ecological study.

There are numerous habitat differences that are directly the result of variations in topography. Obvious examples are the steep, forested north-facing slopes which are the favoured habitats for birds such as Great Crested Flycatchers, Ovenbirds, Black and White Warblers, Redstarts and Rufous-sided Towhees, versus the flat, open areas of the outwash plain where species such as Sprague's Pipit, Chestnut-collared Longspur, Baird's Sparrow and Upland Plover occur (E. M. Callin, personal communication). Even the Bank Swallows that were seen along the Assiniboine River near St. Lazare depend upon a special kind of topography for their nesting and shelter. Plant species such as Paper Birch, Ground Dogwood and Twin-flower were conspicuously controlled in their distribution by topography, being found only in deep, usually north-facing ravines. This list of examples could be expanded, but those readers who attended the 1966 field trips will likely recall on their own many similar relationships. Those readers who were not at the Rocanville outings, can have an interesting time searching for comparable topographic controls of plants and animals in their home localities.

Climate

To return to our imaginary featureless plain, we can assume that in a small area such as this (10 townships) there would be no significant climatic differences from one end to the other. However, one needs only to stand on the exposed rim of Scissors Creek canyon on a windy day and then to walk down to the sheltered valley floor to realize that there are great climatic differences even in small segments of the 10-township block. Also, on a calm day, the streamlined form of the Common Juniper clumps on the overlook of Scissors Creek canyon will testify to the frequency and intensity of winds in this particular habitat. In addition, a visit to this area in early spring will reveal that certain habitats, because of their topographic position, are still 'in winter' whereas others are well into 'spring'. For example, Crocuses on the open south-facing slopes near St. Lazare are in flower when the Ground Dogwood of the opposite north-facing slope is still buried by several feet of snow. Many of these climatic differences, within a small area, are as great as one could expect over several hundred miles north to south on a flat plain. Thus, we see that topographic variations may result in great climatic differences; in fact, when we think of topographic controls in the distribution of plants and animals we should really be thinking in terms of microclimatic controls. Of course there are other important ways that climate may shape a landscape or a community. Think of the consequences of the high water levels in the Qu'Appelle Valley in 1954. Floods that year were a result of the unusual weather conditions over a large area and the effects of flooding will be visible in floodplain communities for many decades. Wherever a poplar tree died from the prolonged high water levels, a new habitat was made available for insects that inhabit dead, standing trees and for birds that eat such insects. Whole new communities of plants are now developing in places that were flooded or where new sand bars were deposited. The crescentic

terraces that are visible in the centre of Figure 2 indicate the dynamic nature of the flood-plain communities and remind us of the importance of climatic fluctuations.

Habitat changes brought about by climatic fluctuations are also well shown by the presence of sand dunes along the eastern edge of the outwash plain and in the bottom of the Qu'Appelle Valley just west of the town of St. Lazare. These dunes all appear to be stable today because of the cover of vegetation upon them—an excellent example of the influence of organisms upon the environment. However, at some time in the past the climate was such that there was not sufficient plant cover on the sand to prevent its movement by wind. With this example we have now introduced an even more complex ecological sequence, involving inter-relationships between: *parent material* (the sand), *topography* (outwash plain versus sand dunes), *climate* (winds of sufficient intensity to move the sand), and *organisms* (the presence or absence of vegetation as a consolidating factor on the dunes).

Organisms

Various plants and birds have been named in the discussions above and all ecological settings must, by definition, include living things. The character of any plant or animal community will obviously be influenced by the species that are available to occupy the habitat. Thus, the subject matter of animal geography and plant geography (the study of distributional ranges) is extremely important to the ecologist. The Turkey Vulture that was observed in flight over the Assiniboine River and the oaks that occupy the south-facing slopes in this area (Figure 3) are both examples of organisms that increase the ecological diversity simply because their distributional ranges happen to extend to the Rocanville - St. Lazare area.

Influences of the environment upon living things have been discussed by various examples above and the list need not be expanded here. Influences

of living things upon the environment are often less conspicuous, providing we temporarily exclude the influences of man. The example of vegetation changing an unstable dune environment into a stable one has already been mentioned. An expanding aspen clump is another case, because the shade created by the overstory creates an environment near ground level very different from that at the same level in the open. These shade-induced environmental changes allow invasion of various plants and animals that would not otherwise be present.

As in most of southern Saskatchewan, man has done more here to influence the environment and change the landscape than all other organisms combined. Bird-watchers are well aware of the special habitats that have been created for birds by man's barns, shade trees, ornamental plants, agricultural crops and domestic animals. The introduction of new plant species, including weeds, has had an obvious effect on the vegetation of the area. Since the first settlers arrived in the Rocanville area in 1882 (Mrs. Wilma Sutton, Rocanville, personal communication), many other changes have been brought about: roads have been built, wet areas have been drained, bodies of water have been created, exposed knolls of the ridged moraine have been eroded down to the grey sub-surface soil layer following cultivation, trees have been cut and land has been cleared (although in general the increased protection from fires appears to have allowed a greater development of forest on areas that were described as grassland by the early explorers and first settlers). The subject of man as an ecological factor is so large and important that it could only be introduced here to remind the reader that a total ecological assessment of an area must always take man and his influences into consideration. Assessment of the ecological impact of man in the Rocanville-St. Lazare area is a fascinating field of study that is awaiting research, as it is in most settled areas of Saskatchewan.



FIGURE 3—Distinctive distribution of oaks as scattered individuals on southerly-facing slopes along Scissors Creek. This habitat indicates why Bur Oak is classed as one of the most drought resistant species of the eastern hardwoods. The small marsh in the foreground has formed behind a slump terrace on the mid-slope of Scissors Creek canyon.

Time

The ecological influences of parent materials, topography, climate and organisms all require time for their operation. In fact, we may think of time as the integrating force for these other factors. For example, the depth and length of Scissors Creek canyon are functions not only of parent materials (resistance of the rock to downcutting) and climate (amount of water available for erosion) but also of time (how long the area has been exposed to erosive forces). Similarly, the presence of oak on the south-facing slopes of the large river valleys and on the morainal uplands is likely controlled to some extent by the time that the species has had for



FIGURE 4—Green ash stump cut by beaver along Assiniboine River near St. Lazare, Manitoba. Note regeneration of new stems on the ash.

northwestward migration since glaciation. Thus it is important to realize that the time that we happen to observe a particular ecological sequence or situation may greatly influence what we see. The beaver-chewed stump of green ash from along the Assiniboine River near St. Lazare (Figure 4) may be used to illustrate two important ecological principles: (1) there are frequently two-way, rather than one-way relationships between organisms in a community (in this case the ash serves as one of the dam-building materials for beaver but, in turn, cutting by beaver stimulates production of new stem shoots on the ash—thus, the number of stems of ash per acre and the number of beaver per acre could both be inter-related and influential upon one another); (2) assessment and description of an ecological situation will depend on when it is observed (note, for example, how an ecologist's assessment of number of ash stems

per acre could vary if he visited the site before harvesting of ash by beaver, immediately after harvesting by beaver, or after regeneration of numerous secondary stems).

Summary

The examples above have suggested several possible ways that we may approach a study of inter-relationships between organisms and their environment. Although the Rocanville area lent itself exceptionally well to the search for such inter-relationships, we may find similar phenomena wherever we live or travel in Saskatchewan. Unlocking the ecological story of any area serves both as a fascinating outdoor exercise and as a stimulus to our appreciation of natural and managed landscapes.

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Ed. Note: Details and programme of the SNHS Summer Meeting at Rocanville, June 1966, including complete list of birds seen and people registering may be obtained by writing to the editor.



Wild geese flying

Photo by Fred W. Lahrman

Flying through a cloud-made place
 A bird may tangle east and west,
 Maddened with going, crushing space
 With the arrow of its breast.

From "Flight", by Hazel Hall, 1886-1924

The wild gander leads his flock through the cool night,
Ya-honk he says, and sounds it down to me like an invitation,
 The pert may suppose it meaningless, but I listening close,
 Find its purpose and place up there toward the wintry sky.

From "Song of Myself", by Walt Whitman, 1819-1892

BIRD SANCTUARIES IN SASKATCHEWAN 1887 — 1965

by **L. H. Murray**, 24 Cornwall Crt., Regina

The first bird sanctuary was set up in Saskatchewan on the shores of Last Mountain Lake as early as 1887. By an Order in Council, June 8, certain lands "then vacant and unsold, were reserved from sale and settlement and set apart as breeding grounds for wild fowl". The area described contained approximately 2500 acres adjacent to the shore line at the north end of the lake. Sanctuaries in other provinces were not established until 1920 so Saskatchewan has the distinction of having the first bird sanctuary in Canada.

As early as 1910 biologists, conservationists and hunters in North America were aware that with the clearing of land for settlement and with the draining of marshes formerly used as nesting areas, certain birds were in danger of extinction. To prevent this and to give more adequate protection to migratory game and non-game birds than was provided by the Game Laws, the Federal Migratory Bird Law was passed in the United States in 1913. Thus in the United States, the open season was made uniform not exceeding three and a half months. A closed season for a period of years was given to certain birds, particularly shore-birds, and the shooting of insectivorous birds was entirely forbidden (Hewitt, 1921, p. 266). Since these birds were migratory, such a law was ineffective if the adjoining nations, Canada and Mexico, did not pass a similar law. In July 1913 the President was asked by the Senate to negotiate a treaty for the protection of migratory birds with Canada. After three years the terms were drawn up and the treaty signed in 1916 between the United States and Great Britain. This was later ratified by The Migratory Birds Convention Act which was passed by the Canadian Parliament in 1917.

The closed season for migratory game birds was to be between March

and September, thus eliminating the spring shooting of these birds. The closed season for migratory non-game and migratory insectivorous birds was to continue throughout the year. Thus any birds important to agriculture were protected. No open season was to be longer than three and a half months. Certain provisions were made, however, to allow Eskimos and Indians to kill game and non-game birds for food but they were not permitted to sell them. Closed season could be announced for game birds needing special protection. Thus in 1917 a closed season of ten years was given to band-tailed pigeons, little brown, sandhill and whooping cranes, swans, curlew, and all shore birds (except the black-breasted and golden plover, Wilson or jack snipe, woodcock, and the greater and lesser yellow-legs (Hewitt, p. 272). The taking of the nests and eggs of all migratory birds was prohibited except under a permit issued for collections made for scientific purposes. Measures necessary to the carrying out of the terms of the treaty were to be undertaken by each of the contracting parties. Thus regulations stating the open season for game birds in each province must be passed each year by an Order in Council.

In Saskatchewan, Mr. Bradshaw, the game guardian, hailed this treaty as the most advanced legislation proposed for the protection of wild life and he pointed out that over 1,000 species and subspecies of birds were affected (Department of Agriculture Report, 1916, p. 233). He further proudly commented:

Our game laws are so nearly in accord with the provisions of the treaty . . . it was only necessary to make two minor changes in The Game Act. One for the protection of cranes and the other for the protection of certain shore birds.

Apparently Saskatchewan had early been aware of the need for conservation and had already taken some steps to achieve this. In 1909 Dominion Forest Preserves were declared game preserves and thus birds were protected in these areas. Game guardians, however, were aware that further protection of migratory birds was necessary if many birds were to survive. In 1910 it was reported that ducks were harvested near Buffalo Lake at the rate of 100 a day, 600 a week and that already two wagonloads of geese had been taken from Lake Johnstone (Department of Agriculture Report, 1910, p. 139). In 1911 a Moose Jaw dealer was being supplied with 100 birds a day and by September 27 the hunter who supplied them had marketed 2,500 and had hired two men to help him slaughter the birds (Department of Agriculture Report, 1911, p. 171). Such reports not only reveal the abuse by hunters in slaughtering birds but also the great numbers of birds in the country and the importance of the participation of Saskatchewan in any North American conservation policy.

In 1915, while negotiations on the treaty were in progress, steps were taken to facilitate the setting up of bird sanctuaries in Canada. On May 18 the Minister of the Interior approved the reservation of all vacant quarter sections immediately adjoining certain lakes. In Saskatchewan the following were named: Quill, Lenore, Basin, Bitter, Cabri, Bigstick, Crane, Goose, Redberry, Johnstone, Chaplin and White Bear. In 1917 and in 1918 Dr. Anderson, zoologist for the Geological Survey and a member of the Advisory Board in Wild Life Protection, visited the areas and reported on their suitability as sanctuaries. Their use as breeding grounds and as resting areas for migratory birds, the existence of adequate food, and other essentials of reserves were all considered before he recommended any as permanent bird sanctuaries. Of Last Mountain Lake he wrote:

This is a very good breeding ground, with many large ducks, canvasbacks, redheads, and mallards; a

COMMEMORATING
MIGRATORY BIRD TREATY
UNITED STATES - CANADA

50 YEARS
COOPERATION FOR
PRESERVATION OF
MIGRATORY BIRDS



OFFICIAL FIRST DAY COVER
NORTH AMERICAN WILDLIFE
AND NATURAL RESOURCES CONFERENCE

few Canada geese nest on the islands, also cormorants and gulls. It is well posted as a provincial game refuge. It should by all means be retained as a sanctuary (Hewitt, p. 302).

His description of Lake Johnstone is interesting because after giving the numbers and species of birds seen he states his opinion of the use of surrounding area as farm land.

It has one large island, Isle of Bays, in the north part of the lake, which is also a provincial game refuge. This island is a very valuable reserve, comprising about 200 acres. Large numbers of white pelicans, cormorants and great blue herons breed on it, also black-headed gulls. . . . In October, 1918, I saw about 500 Canada geese resting on it in the afternoon, and about 200 whistling swans in the water near the island. . . . The lake is said to be one of the chief resting-places . . . in migration through this country. The land around the lake is mostly poor agricultural land and seems

suitable for wild-fowl breeding. Lake Johnstone is a good preserve for pelicans and cormorants, as there are no valuable fish in the lake. Where there is reserved land in blocks of fair size it should be retained. There is so much privately owned land around the lake, and the lake is of such size, that it can hardly be retained as a sanctuary complete. With the island reserved as a refuge, and some breeding-ground reserved along the shores, the main shore of the lake might be left open to shooting in season (Hewitt, p. 302-303).

In the main the lakes he considered were in land unsuitable for farming yet suitable as good breeding grounds for wildfowl. In this category he placed Lake Johnstone, Chaplin Lake, White Bear Lake, Crane Lake and Bigstick Lake. Of the Quill Lakes he reported that some of the land there was more suitable for farming than for wildfowl. Basin Lake with its high timbered shores was not so important as the swamp area near Middle Lake, which lies between Basin Lake and Lake Lenore. Lenore Lake, he felt, qualified as good breeding ground and if the district was shot over when settlement was heavier, the Lake would provide a resting place for wildfowl. Redberry Lake he noted was in a settled area and the land cultivated so close to the shore that he recommended the islands be reserved but he questioned whether the fragments of land available on shore were worth reserving. He had the same comments to make of the fragments of land left on the north, northwest, and southwest sides of Bigstick Lake. In his appraisal of land and its value agriculturally he showed an awareness of the pressure which would be put upon sanctuaries reserved in settled districts. This, however, did not prevent him from being enthusiastic about such well used breeding grounds as Last Mountain Lake and Lake Johnstone. On the basis of his reports, bird sanctuaries were established in Alberta by an Order-in-Council June 15, 1920, but in Saskatchewan an effort to bring Last Mountain Lake

Sanctuary into line with the regulations of the Migratory Birds Convention Act delayed the setting up of sanctuaries.

The regulations governing bird sanctuaries passed by Order-in-Council June 22, 1920, were based on this act. No person was to use any part of a bird sanctuary, unless he had a permit, licence, or a lease, issued by the Director, or had obtained a lease prior to 1920. No person in a bird sanctuary was permitted to kill, capture, take, injure, or molest migratory birds, or take, injure, destroy or molest their nests, or eggs. The carrying of firearms or any appliances for killing birds was prohibited in a sanctuary. However one clause to cover all exigencies, scientific or otherwise, was inserted in the regulations and seemed a contradiction of this rule. The Director could, "by permit, authorize in any year a person to shoot wild ducks and geese in such portion of a bird sanctuary and during such time as the Minister may from time to time decide. . . ." In line with this the regulation prohibiting dogs and cats in a bird sanctuary was modified to permit sporting dogs to be taken into a sanctuary where shooting, by permit, of wild ducks and wild geese during the open season has been granted. When Last Mountain Lake Bird Sanctuary was finally brought into the federal scheme certain changes in these regulations as well as in the boundaries of the sanctuary were noticeable. By an Order-in-Council certain islands and small land areas were added to the sanctuary and the entire lake was reserved with the approval of the Province of Saskatchewan. Use of the land for grazing and haying was prohibited and the destruction of the migratory birds or their nests was strictly forbidden. But a new clause appeared in 1921 stating that "lawful shooting of game birds on all portions of Last Mountain Sanctuary, except islands north of and including Pelican Island was permitted." The sanctuary had long been a game preserve and apparently unless hunting was permitted it could not be brought into the federal



Photo from Archives, Regina

The steamboat, "Qu'Appelle", formerly called "Lady of the Lake", at Port Hyman on Last Mountain Lake, ca. 1905?

scheme. This is a complete misunderstanding of the purpose of a sanctuary. The act remains in force today but no use is made of this special permission so firmly is the concept of a sanctuary established in the public mind now. It took us 30 years or until 1950 to abolish this "lawful shooting" in our bird sanctuaries, this violation of the basic rule governing all sanctuaries or refuges.

An Order-in-Council passed in Ottawa on March 9, 1925, stated as the purpose of establishing bird sanctuaries in Saskatchewan:

That for the better protection of wildfowl it is desirable to create certain areas as bird sanctuaries.

That the Great Plains region of Canada contains probably the most valuable breeding grounds in North America for the wild water-fowl of the Continent and that it is important that measures should be taken to set apart permanently certain

areas for the propagation of bird life, a resource of economic value in providing sport and food;

That a careful examination has been made by an eminent zoologist of the areas occupied by this valuable bird life and his report has been made the basis of selection as bird sanctuaries of the more important breeding grounds in the said provinces;

That the Provincial authorities are in full accord with the scheme;

That the advance of settlement, followed by cultivation of the land, the drainage of lakes and marsh areas for development purposes, has seriously restricted the areas suitable for the propagation of wild water-fowl and under present conditions it is necessary that proper means should be taken to check the decrease in the number of these birds to guard against the danger of extermination; and

That it is worthy of note that the United States has created a series of Bird Refuges, notably in Louisiana, for the protection of migratory wildfowl on their winter feeding grounds. . . .

Obviously Canada considered the setting up of bird sanctuaries an obligation which they assumed when the Migratory Bird Treaty was signed.

Twelve bird sanctuaries were described: Last Mountain Lake, Lake Johnstone, Quill Lakes, Lenore Lake, Basin and Middle Lakes, Chaplin Lake, Crane Lake, Bigstick Lake, Cabri Lake, Whitebear Lake, Redberry Lake, Manito Lake. With the exception of Cabri they all included land areas as well as the land covered by water. The areas occupied by these sanctuaries is shown in the table. Six of the 12 had 2,270 to 3,916 acres; two were in the 1,000 acre range while two others had 5,760 to 7,080 acres. Chaplin had over 32,000 acres reserved, 21,760 of which follow Chaplin Creek south for 10 miles and include the marsh at the east end of the lake. Redberry Lake included only fractional sections at the north end of the lake.

Since bird sanctuaries on the prairie were established for use as breeding grounds, seven of them were in the grasslands, three in aspen or parkland and one (Quill Lakes) included both grass and parkland. The lakes reserved were scattered over the central and western part of our prairies and extended only as far north as the Battlefords. In 1925 Public Shooting Grounds were established on the following lakes: Good Spirit, Willow Bunch, Lake of the Rivers, Twelve Mile, Eagle, Jackfish and Murray, Ponass, Muddy, Shallow, Goose, and Cypress. Thus the twelve sanctuaries and the twelve public shooting grounds reserved most of the big lakes in the southern half of the province. Only the Qu'Appelle Lakes, which had already become resort areas, were not included. Chaplin, already drying up in 1917, was in such poor land that its marsh areas made it seem the natural place for development, on a large scale, of a good breeding area. Thus

full consideration had been given to the importance of establishing bird sanctuaries in the plains region of Saskatchewan in order to carry out the terms of the Migratory Birds Convention Act.

The regulations of 1920 governing bird sanctuaries were modified in an interesting fashion. When the Experimental Farms at Indian Head and Sutherland were established as bird sanctuaries in 1924 they remained under the management of the Forestry Department and their officers were allowed to use firearms in the sanctuary. In 1925 conditions governing grazing leases which pre-dated the establishment of bird sanctuaries were also modified. Such leases remained valid only if the restrictions on wildlife were observed. For non-observance of these restrictions the lease could be cancelled by a twelve month notice. The Order-in-Council (September 21, 1897) which set apart certain lands adjoining Crane Lake as a stock-watering reserve was validated. The right of riparian proprietors to claim fractional sections (should such land become available as the water receded) was acknowledged. Otherwise the regulations set down in 1920 remained in force.

The history of the development of the sanctuaries shows that from 1925 to 1930 the interest in them was perhaps only desultory. In 1927 a fractional quarter section of land was added to Johnstone's Lake, while a half section was withdrawn from the Crane Lake area. In 1928 over a quarter section of land which had become available was added to the Quill Lakes Sanctuary. Such attempts apparently to keep the books balanced were, of course, upset by the years of drought in the thirties. About a section of land was withdrawn from Chaplin and three sections from Johnstone by Order-in-Council in January, 1930. In the Natural Resources Transfer Agreement between the Dominion Government and the Province of Saskatchewan completed on March 20, 1930, the clause relating to sanctuaries ran as follows:

The Province will further continue

APPROXIMATE AREAS OF BIRD SANCTUARIES IN SASKATCHEWAN 1925 - 1956

	1925		1930		1948		1951		1953		1956	
	Land	Water	Land	Water	Land	Water	Land	Water	Land	Water	Land	Water
1. Last Mountain Lake	3200	38400	3200	38400	2720	38400	3180	7680	3180	7680	3169	7680
2. Johnstone Lake	7080	77400	5320	77400	5320	64400	0	64400	0	64400	0	64400
(Old Wives Lake)												
3. Quill Lakes	5760	162573	5760	162573	4420	162573	0	0	0	0	0	0
4. Lenore Lake	2270	21858	2270	21858	2110	21858	0	21858	0	21858	0	21858
5. Basin and Middle Lakes	3030	21546	2390	21546	2390	21546	0	21546	0	21546	0	21546
6. Chaplin Lake	32480	13664	32160	13664	0	0	0	0	0	0	0	0
7. Crane Lake	3916	12148	3596	12148	0	0	0	0	0	0	0	0
8. Bigstick Lake	2500	9135	2500	9135	0	0	0	0	0	0	0	0
9. Redberry Lake	1250	17886	1250	17886	1250	17886	0	17886	0	17886	0	17886
10. Cabri Lake	0	2746	0	2746	0	0	0	0	0	0	0	0
11. Whitebear Lake	1150	3375	1150	3375	0	0	0	0	0	0	0	0
12. Manito Lake	3120	29124	3120	29124	3120	29124	3120	29124	0	0	0	0
13. Sutherland Experimental Station	320	0	320	0	320	0	320	0	320	0	320	0
14. Indian Head Experimental Station	80	27	80	27	80	27	80	27	80	27	80	27
15. Duncairn Reservoir	0	0	0	0	0	3840	0	3840	0	3840	0	3840
16. Murray Lake	0	0	0	0	0	2880	0	2880	0	2880	0	2880
17. Scent Grass Lake	0	0	0	0	0	1920	0	1920	0	1920	0	1920
18. Upper Rousay Lake	0	0	0	0	0	4480	0	4480	0	4480	0	4480
19. Val Marie Reservoir	0	0	0	0	0	1280	0	1280	0	1280	0	1280
20. Neely Lake	0	0	0	0	0	0	0	1960	0	1960	0	1960
21. Opuntia Lake	0	0	0	0	0	0	0	3840	0	3840	0	3840
22. Wascana Lake	0	0	0	0	0	0	0	0	0	0	100	220
Total areas	66156	409882	66156	409882	21730	370214	6700	182721	3580	153597	3669	153817

and preserve as such the bird sanctuaries and public shooting grounds which have been already established and will set aside such additional bird sanctuaries and public shooting grounds as may hereafter be established by agreement between the Minister of the Interior and the Provincial Secretary or such other Minister of the Province.

However, as the years of the drought continued, lakes dried up and some sanctuaries were not serving the purpose for which they had been set up. On August 14, 1941, an Order-in-Council permitted the sanctuaries at Chaplin and Bigstick to be used as community pastures until the former water conditions were restored. This had also been done earlier (June 24, 1941) permitting the land in the public shooting ground at Eagle Lake to be used as a community pasture. Agriculturalists, concerned over the need of land for more pasture, over the unsupervised use of reserve areas in which the no-trespass rule was not enforced, and over the infestation of such areas by weeds, put such pressure on the authorities that on December 6, 1946 an amendment to clause 20 in the Natural Resources Transfer Agreement was passed:

20 a. The Province may discontinue any bird sanctuary or public shooting ground . . . [when] an Agreement is entered into between the Minister of Mines and Resources of Canada and the Minister of Natural Resources and Industrial Development of Saskatchewan. . . .

Now that machinery to abolish such areas was set up the whole situation came under review. At the request of the Department of Agriculture in 1948 two officials, one federal and one provincial, inspected the bird sanctuaries and found that drought had made some of the land unsuitable for the purpose for which they had been set up—as breeding grounds and a resting area for migratory wildfowl. The recommendation was that five of these bird sanctuaries be discontinued: Chaplin, Crane, Bigstick, Cabri and Whitebear. Before this became law

(by Order-in-Council, November 24, 1948) five replacements were established by Order-in-Council November 3. These five were: Duncairn Reservoir, Murray Lake, Scent Grass Lake, Upper Rousay Lake, and Val Marie Reservoir. The policy now was to make only “the land covered by water and the islands therein” sanctuary so that while the number of sanctuaries was kept the same the acreage was not. The total area of the five discontinued sanctuaries was 39,406 acres of land, and 41,068 acres of water while that of the five replacements was 14,000 acres of water (see table).

As was to be expected the new policy of establishing bird sanctuaries which did not include land areas increased the pressure from agriculture requesting a revision of the boundaries of all sanctuaries. Further inspection was carried out in 1949-1950 and it was recommended that all bird sanctuaries be water areas except two: Last Mountain Lake Bird Sanctuary and Manito Lake Sanctuary which were to be left with land or shore areas. Two replacements were set up, Neely Lake and Lake Opuntia, with a total of 5,800 acres water, for the Quill Lakes Bird Sanctuary now discontinued with its 4,420 acres of land and 162,573 acres of water. In 1953 Manito Lake Bird Sanctuary was discontinued, a further loss of 3,120 acres of land and 29,124 acres of water. Although in 1956 Wascana Bird Sanctuary was set up, its total area of land and water was only 320 acres. Thus the total loss in area reserved as bird sanctuaries was 62,487 acres of land and 256,065 of water. In Last Mountain Lake Sanctuary a point of land (eleven acres) was leased in 1954 to the Fish and Game League of Govan, and in 1962, 180 acres were withdrawn for use as a regional park.

The loss of land in Sanctuaries which was intended as breeding ground for waterfowl in the prairie or pothole country increases Canada's difficulties of living up to the obligations assumed in the Migratory Bird Treaty. For the last 20 or 25 years

various projects have been undertaken to maintain and re-establish nesting areas for migratory waterfowl. In the main this has resulted in an attempt to save our marshlands in the face of an agricultural policy of drainage and reclaiming such areas for farming.

The greatest pressure against preserving marshlands has come from agriculture, as might be expected in a province which in the past has been almost exclusively agricultural. As settlement increased land was at a premium. During the drought years large areas of marsh dried up and became suitable for grazing and haying. As a marsh dried up, use was made of it by neighboring farmers. The use of such low-lying land in the dry years meant that in the good years of rainy weather the cry for more and more drainage of the land went up. On the prairies we have more or less accepted drainage as an agricultural necessity but few of us realized the consequences of draining indiscriminately. In fact, public and government have both supported the programme. The Saskatchewan Provincial Government participates in considerable drainage for flood control and land reclamation on private and public lands. The work is done under authority of the Conservation and Development Act of 1949, with the Government paying up to 50% of the cost of land reclamation on private lands and the full cost on government land. In addition, as is pointed out by Burwell and Sugden (1964), the existence of a main Conservation and Development ditch often makes it possible for individual farmers to drain their wetlands by means of short lateral ditches. It is startling, however, to read that according to the report of Herb Moulding of Ducks Unlimited (Burwell and Sugden, 1964) on registered drainage in Saskatchewan up to 1960:

Wetland loss is of greater magnitude in that Province than in Manitoba and Alberta. There were 563 registered ditches and drainage projects that affected 115 thousand wetland acres. Ninety-five percent

of the wetlands affected were under 40 acres. Of 843 licensed flood irrigation projects, 257 drained 27 thousand wetland acres. The drainage of 21 large marshes and lakes involved 55,580 acres. Thirty-nine additional lakes and marshes, totaling 115,149 acres, have been proposed for drainage.

To this gloomy picture must be added the result of the investigations by Ducks Unlimited of the extent of the damage caused by *unregistered* drainage, described as follows by Burwell and Sugden:

In an area of 605 square miles, 80 water areas each more than 10 acres in size were inspected. Twenty-three had been ditched—13 by farmers, 8 for roads, 1 for railway, and 1 by authority of the Prairie Farm Rehabilitation Act. In a 245-square mile block, 5 of the 18 lakes were lowered or drained by farm or municipal ditches. Twenty-nine percent of the wetlands investigated in these surveys had been affected by drainage.

Little attempt seems to have been made in the thirties and forties by the provincial government to re-establish or even to maintain the water levels in the marsh areas. Various conservation projects, by Ducks Unlimited, the Fish and Game League and the federal authorities through such organizations as the CWS and PFRA, were acknowledged in the annual reports of the Department of Natural Resources. In 1943 Ducks Unlimited was praised for its completion of 15 projects varying from small earth-filled dams to the Willowbrook diversion scheme near Yorkton. The report for 1943 also announced that the Dominion Department of Agriculture had, over a period of 15 years, completed 12,000 small water projects. The magnitude of this work by outside organizations is perhaps indicated more realistically in the following statement by Angus Gavin (1964):

In the 25 years of work on the Canadian prairies, Ducks Unlimited has built more than 600 projects. These control water on more than

one million acres with a shoreline in excess of 5,000 miles. Since 1938, a total of 8.3 million dollars has been spent on conservation in Canada. The major part has been used for building and developing waterfowl projects.

Extensive as such work has been, some of it, such as earth-filled dams, must now be renewed if they are to be maintained. In the last five years review of the whole situation has been recognized as a necessity if some management of our water resources and the preservation of some of our marshland is to be achieved.

One would expect that in this concern over the loss of marshland, the breeding areas for waterfowl, the Game Branch would exert the greatest pressure against any encroachment on such areas. From 1905 until 1918 they pursued a farsighted policy moving quickly to establish game preserves before any conflict with settlers should arise. At first all Dominion Forest Preserves were declared provincial game reserves but as these areas proved too large for efficient management, smaller areas were set up as provincial game reserves. The Department of Agriculture Report, 1918, shows that by 1918 ten of these, with a total area of 3,825 square miles, were established as well as three wildfowl reservations. Work on the Game Act was just as progressive, necessitating only three minor changes to bring it into line with the Migratory Bird Convention Act. But they do not seem to have understood or agreed with the policy of setting up bird sanctuaries following the passing of this act. This, in Saskatchewan, might well have been based on a faith that the game preserve was established "for the propagation and the perpetuation of birds and animals" and that since "all shooting, hunting, or trapping within said preserves is forbidden" bird sanctuaries were unnecessary. While it is true that game preserves were closed to hunting throughout the year they could be declared "open" if the increase in wildlife warranted it. The sanctuary as its name implies, should remain closed

throughout the year. Apparently provincial authorities in the west felt that sanctuaries were a further limiting of areas available for hunting. In Saskatchewan in 1921 they insisted that "lawful shooting" in open season be permitted on Last Mountain Lake Bird Sanctuary and they apparently applied this rule to all bird sanctuaries in Saskatchewan. According to the Department of Natural Resources Report, 1951, shooting was permitted on all bird sanctuaries except two (the Forestry Farms at Indian Head and Sutherland) until 1950. In 1925, the policy of establishing public shooting grounds as well as sanctuaries was adopted and 12 public shooting grounds were set up. In an Order-in-Council, July 29, 1925, the purpose of establishing public shooting grounds was given as:

. . . certain lands were set apart and reserved . . . for public shooting grounds pursuant to a broad scheme to encourage and foster a spirit of sportsmanship, and, moreover, as an auxiliary provision for the protection of wild life in the closed season, and such lands are not available for disposal by sale or under homestead entry or by lease under the grazing regulations.

Such areas remained in effect until 1951 when at the request of agriculture public shooting grounds were abolished.

Until the fifties the main concern of the Game Branch seemed to be the enforcement of the Fur and Game Act and the establishing of game preserves. While in 1918 these preserves numbered 10 with an area of 3,825 square miles, in 1945 there were 76 with an area of 7,792 square miles, and in 1956 there were 144 with an area of 9,200 square miles. By 1964 the number which had remained, about 153 since 1957, now covered an area of 12,000 square miles. Of the 153, 70 were PFRA pastures and 12 were provincial community pastures. In an Order-in-Council, June 1, 1939, an explanation of this policy was given that it was "in the public interest to have the areas so established." All community pastures in

Saskatchewan now are game preserves although opinion is still divided on the effectiveness of this as a protective measure for wild life.

The whole situation of bird sanctuaries needed review. In 1953 nine game preserves were set up at the request of the Fish and Game League who wished them as a means for protecting migratory birds. When the province requested that Manito Lake Bird Sanctuary be abolished, they announced that they were ready to set up a game preserve "on that portion of the sanctuary . . . suitable for such purposes." Some sanctuaries were being made game preserves and game preserves were being made sanctuaries. Other sanctuaries were being discontinued and immediately some of that land was declared a game preserve. As early as 1939, when Redberry Lake Bird Sanctuary was declared a game preserve the Department of Natural Resources report read:

This is a bird sanctuary where hunting is permitted during the open season. The Department felt that migratory waterfowl should not be disturbed on the islands or around the water of this particular lake in order that suitable hunting can be found in the adjoining districts over a longer period of time.

Another problem arose out of the policing of the vast reserve areas administered by both federal and provincial governments. In 1932 the enforcing of regulations in federal bird sanctuaries was turned over to the RCMP after having been entrusted for years to the provincial game guardians. Later, in 1948 the responsibility for this enforcement was extended to include game and fishery officers. To enforce game laws areas had to be well posted. This led to some confusion when a federal bird sanctuary was also a provincial game preserve. In 1962 there was a move to rescind the orders making sanctuaries game preserves and federal signs were posted on bird sanctuaries.

The independent working of various pressure groups had brought about a



strange situation for bird sanctuaries. They were still regarded as of great importance in providing migratory wildfowl with adequate breeding grounds but few had areas left where this was possible. The uplands of lakes had been taken over for agriculture and recreation; their islands were now vulnerable to boats and to picnickers. Birds resting in migration were free to use the waters of the lake but by feeding on the adjacent land areas they created a depredation problem. Those who drafted the Migratory Bird Convention Act had provided, they thought, for this age old complaint. Owners of crops destroyed by migratory waterfowl could apply for a permit to shoot such birds. In 1948 they were required to submit a list of the birds shot and of the hunters who participated in the shooting. When crop damage in the Lake Johnstone area was very heavy in 1953 the whole area was declared "open to shooting under Section 40 of the Migratory Bird Convention Act." Less extreme measures to reduce crop damage were being worked out in other areas by crews of Ducks Unlimited, Canadian Wildlife Service and the Department of Natural Resources. Lure crops were planted on sanctuary ground, swathed and left there during the period of migration. The loss of upland areas in sanctuaries limits the

government's use of this method of controlling depredation. Moreover these lands previously used for nesting when sown to farm crops are heavily damaged by wildlife. Some financial protection from this depredation was offered to farmers in the Wildlife Crop Insurance plan introduced in 1952. Fifty cents—this was later made one dollar—was added to each hunting licence and a 12 per cent—later reduced to 2 per cent—premium was offered to each farmer. The table presented in the 1960 report of the Department of Natural Resources shows that between 1953-59 the number of farmers insured increased from 20—407, the number of claims from 9—275 and the losses paid from \$2,377.75 - \$150,000. While the farmers in the first two years of the scheme numbered only 49, a reserve fund of \$200,000 was being built as many hunting licences (52,000 in 1959) were being taxed to provide the funds necessary for the Wildlife Crop Insurance scheme.

In the sixties Saskatchewan seems to be moving towards a scheme to save our wetlands. Ducks Unlimited conducted a survey of marsh and wetlands. In 1957 the province changed the structure of the Game Branch and set up two new divisions, Wildlife Research, and Statistics. The Wildlife Research personnel have undertaken various projects to determine crop depredation, waterfowl disease, water pollution, etc. In 1959 a program for the preservation of wetlands was declared necessary. Land was to be purchased, leased or transferred to the Department of Natural Resources after surveys had been made to determine the number and kinds of wetlands involved. Later, in 1965, money to buy such land for wildlife management was granted to the Department. In the meantime the federal Canadian Wildlife Service, established in 1947, was given as one of its tasks the administering of bird sanctuaries across Canada. In addition they are carrying out a program of research which must precede any development of a policy of wildlife management in a land becoming more and more

heavily settled, facing greater and greater demands for recreational areas and, in consequence, being threatened with the disappearance of natural areas and migratory waterfowl. In 1961 the Water Rights Act was amended to state that water could now be used for the benefit of wildlife. In 1964 Dr. Munro announced that a Dominion-wide land inventory was to be undertaken in 1965.

Something must be done and done quickly or we will be in the situation faced by Canadian Wildlife Service in its proposal to offer easements to farmers to maintain the pot-holes on their farms. With the further mechanization of farming and the use of bulldozers such pot-holes are being fast eliminated and with them the scheme of easements. All of us find it hard to visualize a prairie in which spring is not heralded by the wild cries of migrating geese and crane or in which autumn does not bring those great skeins of waterfowl filling the sky with their clamor and excitement. We were pleased to see that sanctuaries were established but we left them to struggle along facing the increasing pressures which threatened their very existence. We have not supported the protests which a few naturalists and conservationists have raised against these threats. Our excuse has been that we were ignorant or unaware of the seriousness of the situation. There may be others who will conclude that we are apathetic, even indifferent, to the shaping of policy governing bird sanctuaries.

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THE COLONIAL BIRDS AT SUGGI LAKE, SASKATCHEWAN, IN 1966

by **Richard M. Sanderson**, Molanosa, Sask.

In the last issue of the *Blue Jay* (June, 1966) there appeared a letter entitled "Destruction of colonial birds on an island on Suggi Lake", by Ralph Carson, which showed a considerable disturbance of pelicans and cormorants in 1964, and which advocated research into the status and protection being afforded these birds. After reading this I decided to visit the colony. On June 29, 1966, I flew from Deschambault Lake, 90 miles northwest of Suggi Lake, to the island which lies in the middle of Suggi Lake. "Suggi", according to my informants, is a Cree Indian word meaning "hurry-up".

The results of the 90 minutes I was able to spend on the island, and the subsequent information I have obtained, indicate that the colonies have undergone some destruction with the apparent loss of Double-crested Cormorants and Great Blue Herons as breeding species for at least this year. As well, it would appear that the degree of loss suffered by these and other species nesting on the island varies from year to year.

The island is the westernmost of two long, narrow islands situated slightly southwest of centre on the lake. It is approximately three-quarters of a mile long, less than 100 feet wide, and is about 15 feet above the lake level. Only the northern half of the island, as shown by Carson, is suitable nesting habitat for colonial birds, the rest being a tangle of fallen trees and weeds, with some mature poplar, spruce, and assorted bushes at the south end of the island. The predominant ground cover around the open patches on the northern half of the island is stinging nettles and small weeds. The nettles were three feet high while the rest of the weeds were no more than six inches high. The northernmost tip of the island is a jumble of boulders devoid of vegeta-

tion and not occupied by any of the colonial species. The shoreline is steep and rocky.

Each spring, from about the last week of May until the middle of June, a native commercial fishing crew fishes for pickerel and whitefish at the lake. The length of time which they spend at the lake depends upon the time it takes them to catch their yearly limit. The natives come to Suggi Lake from the Cumberland House area via the North Saskatchewan and Grassberry rivers. In 1966, fishing operations took about two weeks and ended about the second week in June, according to Bob Heidel, Nipawin Air Services, the pilot who flew the fresh fish out to a processing plant at Jan Lake. Mr. Heidel also said that the fishermen were camping on the island next to the one on which the birds were nesting. A small shed on the adjacent island is used to store the fresh fish until the aircraft arrives. Heidel believed that the birds were being protected by a conservation officer from Cumberland House.

I made a hasty survey beginning at the middle of the island and working in a northerly direction, recording nests, eggs, young, etc. The suitable half of the island is divided into specific breeding areas. The first nest area encountered was a deserted White Pelican colony. There were 213 deserted nests with approximately 250 destroyed eggs lying about, some in the nests and others scattered throughout the area. Crushed eggs made an accurate count impossible. All of the eggs not crushed appeared to have been broken open and eaten by gulls; these eggs had a characteristic jagged hole in the side and were entirely cleaned out. One egg which was not broken was found to be rotten and had no embryological development. The next colony was that of Common Terns. Some were nesting on top of



The White Pelican

Photo by Doug Gilroy

the deserted pelican nests at the edge of the deserted colony. I counted 347 Common Tern nests, and undoubtedly overlooked some which were hidden in the nettles and other weeds at the edge of the open patches. There were 724 eggs and 61 young. The largest young, I judged to be about a week and a half old. The next colony was the first of two adjacent Ring-billed Gull colonies separated by a heavy growth of nettles. Carson, in 1964, and Fox, in 1959, reported large colonies of California Gulls, but all that I could identify were Ring-billed Gulls. Some of the gulls were nesting on the rocky edge of the island which, in some places, rises slightly above the rest of the island. Once again, as with the terns, I undoubtedly failed to record some nests and young because of the heavy weed growth which had, in some cases, formed a canopy over the nests. I recorded 237 nests with a total of 387 eggs; 261 young were still in the nests, plus 510 young running loose in singles or more commonly in bunches. As well, 72 eggs were lying at random on the ground. These are combined figures for both colonies.

The next colony was that of the pelicans — an attempt at renesting. Here I found 121 nests with 222 eggs. There were 41 nests with one egg each, 59 nests with two eggs each, and 21 nests with three eggs each. Approximately 500 adult pelicans were counted swimming one-quarter mile

offshore. There were no young. The pelicans had flattened several square yards of nettles in order to make room for themselves but none were nesting on the nettles. It would appear that the pelicans successfully renested at the north end of the island after a failure at the middle of the island. They did not, however, nest in as large a number. Carson found about 300 nests in 1964 and observed that the major part of the nesting habitat had been occupied by pelicans prior to their desertion.

Immediately behind the pelican colony was a loose colony of Herring Gulls. They were nesting among rocks along the east edge of the island. As well, there was the odd nest near the Ring-billed Gull colonies, but none near the tern colony. Nine nests were found with 14 eggs and six young. There were some young Herring Gulls running about on the island with the other gulls. The largest young Herring Gull, I judged at about three weeks old.

I found no cormorant nests nor did I see any adult birds. There were four old Great Blue Heron nests but no adults were seen. Most of the trees suitable for heron nests had fallen to the ground.

It is my belief that the pelicans, being particularly vulnerable to egg stealing by gulls, are disturbed every year that commercial fishing operations are carried out on Suggi Lake.

NEED FOR PELICAN PROTECTION

by C. Stuart Houston

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While wanton destruction has occurred, I believe it is the noise of the fishing boats constantly roaring past for two weeks that contributes most to the initial desertion. The fishing crews do not usually remain in the area after fishing operations have ceased, which is usually about the third week of June. It is at this time that the pelicans can re-nest, as they have done this year. It is quite likely that some fishermen did visit the island to gather eggs to eat, for this is a common practice all over northern Saskatchewan. I found no campfires on the island and no bird carcasses. I assume that the gulls and terns began laying eggs before the arrival of the fishermen, and had incubated them to a point where few were taken for food by the natives. Once a plainly visible embryo is formed most natives will not collect the eggs for eating purposes. The pelicans probably had a head start also, but the continuous activity may have disturbed them off their nests long enough and often enough to allow the many gulls to swoop in and rob most of the eggs.

I estimated that there were present on the island 1500 gulls, 500 pelicans, and 1000 common terns (all adults). Other species seen on or near the island were: Three male White-winged Scoters, one Franklin's Gull and one Spotted Sandpiper with a nest (four eggs).

I see no way to avoid disturbing the pelicans so long as the fishing operations base remains on the adjacent island, which, as far as fishing is concerned, is an ideal location for the camp. On the other hand the pelicans must be afforded the full protection of the law. Periodic checks of the pelican colony after the fishing operation is completed should be made to determine nesting or renesting success. If it is found that the delay in nesting caused by fishing activity disturbances does not allow sufficient time for the successful rearing of young pelicans and if relocation of the fishing camp is not feasible, then other solutions to the conflict between the colonial birds and fishing interests should be considered.

Because of Ralph Carson's note "Destruction of colonial birds on an island on Suggi Lake," *Blue Jay* XXIV, p. 96-97, June 1966, I am adding the following notes some of which were published in *Audubon Field Notes* 18:515, October, 1964. On July 1, 1964 my wife and I chartered a plane from Nipawin to Suggi Lake. This was just 15 days after Carson's trip which was reported in the last *Blue Jay*. On the long narrow rocky islet there were 466 White Pelican nests, 462 with eggs and the remainder with newly hatched young less than two days old. There were 53 Double-crested Cormorant nests, all with eggs.

Our pilot, Ed Leclair, told us that Indians had been fishing commercially on this lake from May 13 to May 30. Presumably all original nests on the island were destroyed at that time and the birds had renested. By July 1 the young of the year should have been old enough to band so I wondered if the young would mature sufficiently to be able to make the fall migration.

I agree with Ralph Carson concerning the need for protecting the White Pelican before it is too late. The fishing operations of Suggi Lake is a relatively recent development which could soon sadly reduce the pelican population there. The White Pelican population is threatened elsewhere in Saskatchewan too. At Redberry Lake mid-day visits from increasing numbers of boaters who do not know that a short exposure to direct sun may kill a young pelican, threatens the pelicans though the Canadian Wildlife Service signs seem to have helped a lot. On Old Wives Lake the decreasing size of the pelican colony may be related to the use of toxic chemicals on farmlands draining into one of their main feeding areas—Thompson Lake.

BLACK BRANT RECORDS FROM WESTERN SASKATCHEWAN

by **Alex Dzubin**, Canadian Wildlife Service, Saskatoon
and **Norm Hook**, Department of Natural Resources, Kindersley

In North America, the Black Brant (*Branta nigricans*) of A.O.U. Checklist (1957), or (*B. bernicla orientalis*) of Delacour (1954), breeds in the western Arctic and migrates chiefly along the Pacific coast to winter from British Columbia to Baja California (Hellmayr and Conover, 1948; Delacour, op. cit.; Snyder, 1957; A.O.U., 1957; Barry, 1964; Einarson, 1965; Vaurie, 1965). It is primarily a marine goose, but inland records from California and Oregon on the wintering grounds are common. However, "inland records must be recognized as rare instances in these ranges" (Einarson, op. cit.). One unverified and three verified records from western Saskatchewan between 1961 and 1965 are therefore worthy of note; these follow:

1. Unverified sight record. One presumed adult, sex unknown, Sept. 18, 1961, Steeles Lake, three miles southeast of Major, Saskatchewan (51°50' N, 109°35' W). The bird was shot by hunters and described by a Saskatchewan Department of Natural Resources patrolman as a small dark goose having a black head, very black breast and belly, and very evident white neck ring. It was unlike some small Canada Geese (probably *B. canadensis parvipes*) taken at the same time. Two days after handling the bird the patrolman picked the picture of a Black Brant out of a field handbook.

2. Verified specimen—immature female. September 29, 1965, near Teo Lake, 10 miles west and 1 mile north of Kindersley, Saskatchewan (51°30' N, 109°25' W). The lone bird was shot by Mr. Ralph Gray of Kindersley, after it was attracted to a flock of 200 Canada Goose decoys in a wheat-stubble field. Mr. Gray noted the distinctive call of the bird, much unlike any goose call he had heard previously. Later the same day (Septem-

ber 29th) in a field one mile away, he again noted a similar lone brant calling within 100 yards of the decoys. He was unable to collect the second bird.

The specimen obtained is now in the collection of the Canadian Wildlife Service, Prairie Migratory Bird Research Centre, University of Saskatchewan Campus, Saskatoon, Saskatchewan. The weight and measurements of the specimen were as follows: culmen, 30 mm; wing chord, 315; wing flat, 327; tarsus bone, 59; midtoe minus claw, 49; midtail, 90; total length, 518; weight 1016 grams.

3. Verified sight record. October 9, 1965, at a marsh three miles south of Laporte, Saskatchewan (51°10' N, 109°30' W). Three hunters shot three immature White-fronted Geese (*Anser albifrons*), eight small Canada Geese, and an immature brant of unknown sex. The bird was checked by the junior author who noted that the belly was dark nearly to the rump and that only a barely discernible, partial white neck ring was evident.

4. Verified sight record. October 16, 1965, near Cabri Lake, Saskatchewan (51°05' N, 109°45' W). Again, a very dark-bellied, immature specimen of unknown sex which was the only goose shot by a party of six. We were unable to obtain the specimens mentioned in this and the previous item.

Only one previously published record of Black Brant is available from Saskatchewan. Nero (1956) recorded a full mount at the Swift Current Collegiate Museum. An immature bird, it was shot at Eston, Saskatchewan, on November 2, 1938 (Warren, 1956). Mitchell (1923) had earlier noted that there were no records of brant for the province.

Salt (1961) substantiated three records of brant for Alberta from 1957, 1959, and 1960. One was a Black Brant, one an immature female

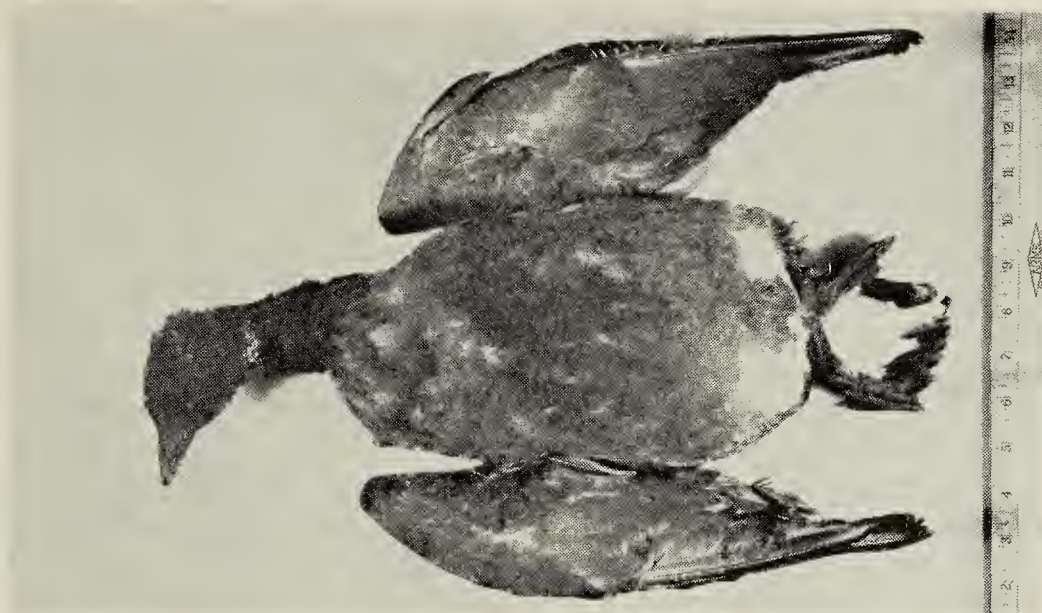


FIGURE 1—Ventral view of immature female Black Brant specimen from Saskatchewan. Scale in inches.

American Brant (*B. bernicla hrota*), and the third an apparent intergrade between the two. Portions of Alberta are also included in a "non-breeding range" of Black Brant by Delacour (1954:186). Taverner (1949) mentions one brant specimen for Manitoba but gives no other details. Hellmayr and Conover (1948) do not give an interior Canadian record of the Black Brant but show one record of the American Brant for North Dakota. They consider the American Brant a "very rare straggler to the interior of North America." Through the auspices of Dr. A. D. Geis, Assistant Director, Migratory Bird Population Station, U.S. Bureau of Sport Fisheries and Wildlife, Laurel, Maryland, I was able to examine the tail feathers of an immature brant (species unknown) shot by Mr. K. W. Knock of Bancroft, South Dakota, near the town of Willow Lake, on October 26, 1963. That record, plus another questionable brant tail specimen from North Dakota in 1963, are cited by A. Godin in U.S. Fish and Wildlife Service Administrative Report No. 73, dated July 16, 1965. Vaurie (1965) considered the Black Brant accidental in inland United States south to Texas. Hansen and Urban (1957) record several "aberrant" band recoveries of Alaskan banded birds, one from Colorado and another from Texas. Einarson (1965: 19) summarized the other inland

records for North America but stressed the rarity of such occurrences. Other casual inland records for both forms are given in the A.O.U. Check-list (1957).

Cade (1953) presents records to show that there may be a major inland movement of brant through the Yukon River basin, but only in spring. A similar overland migration route is described by Barry (1964), for the American Brant between Hudson Bay and the Atlantic coast. Both short and long overflights of land masses by brant are also described in Siberia by Uspenski (1959), who noted that Black Brant breeding on the northern shore of the Chukotsk Peninsula and on Wrangel Island migrate across the Chukotsk Peninsula along river valleys to reach the south shore of the Gulf of Anadyr. Uspenski (1965) also showed the Asian migration route of *B. b. orientalis* as occurring along the interior rivers of the continent.

We can only speculate as to the origin of the Black Brant in western Saskatchewan. They may have originated at Point Barrow, Alaska, or at the mouth of the Mackenzie or Anderson Rivers, N.W.T. White-fronted Geese breeding in these three areas utilize the lakes of the Kindersley district during the autumn migration (Dzubin, Miller, and Schildman, 1964). A few brant stragglers could have mixed easily with migrating

flocks of White-fronts. Hansen and Urban (1957) had previously suggested that two autumn brant recoveries, one from Colorado and the other from Texas, originated when brant from Alaska mixed with White-fronted Goose flocks moving through the Central Flyway. Similarly, a small number of brant could have mixed with flocks of the small Canada Goose (*B. c. parvipes*) which breeds on Victoria Island and the Queen Maud Gulf lowlands (Snyder, 1957) and journeyed to western Saskatchewan with this subspecies. Each of the three verified records in 1965 was of an immature bird. These birds may have been forced inland by unseasonal Arctic storms and then continued on a southward, interior migration route instead of the traditional coastal route around Alaska.

Intensive field work on geese in central Alberta and Saskatchewan from 1960 to the present by provincial and federal wildlife personnel does not substantiate that any of the brant are regular or common autumn migrants in either province. Therefore, both the American and Black Brant should still be considered irregular, rare stragglers in the western Prairie Provinces.

We acknowledge gratefully the help of Dr. R. W. Nero, Division of Natural Sciences, University of Saskatchewan, Regina Campus, for bringing certain key references to our attention. Dr. F. G. Cooch, Canadian Wildlife Service, Ottawa, kindly provided a translated copy of Uspenski's book on Asian geese. Miss B. Davidson provided editorial aid.

There is still some question of the subspecific status of the Black Brant. We have followed the A.O.U. Checklist (1957). However, Delacour and Zimmer (1952) identify the Black Brant as *Branta bernicla orientalis* Tougarinov, a form also followed by Delacour (1954) and Scott (1957), who noted that *B. b. nigricans* bred to the northeast of Hudson Bay, wintered in New Jersey and is probably rare or possibly now extinct. The form which wintered on the North

American Pacific Coast was considered to be *B. b. orientalis* cf. Vaurie (1965) who used *Branta (bernicla) nigricans* to describe Black Brant.

Uspenski (1965) has most recently delineated the breeding grounds and migration routes of all brant in Asia. All are considered to be subspecies, *B. b. hrota*, *bernicla*, *orientalis*, and *nigricans*. *B. b. nigricans* is shown breeding along the eastern mainland coast of Siberia, the New Siberian Islands, and on Wrangel Island where it is associated with *B. b. orientalis*, but generally breeding further east. *B. b. nigricans* is described as wintering along the Pacific Coast of North America while *orientalis* winters on the Yellow Sea, China.

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NOTES ON THE ROUGH-LEGGED HAWK IN THE PERRY RIVER REGION, NORTHWEST TERRITORIES

by **Spencer G. Sealy**, Dept. of Zoology, U.B.C., Vancouver

The Rough-legged Hawk (*Buteo lagopus* Pontoppidan) is a species of circumpolar distribution. During the breeding season in North America it is restricted to the tundra and to the tundra-forest. According to Cade (1955) three or four subspecies are currently recognized, *B.l. sanctijohannis* Gmelin being the breeding form of the American Arctic and Subarctic.

The data presented in this paper were obtained from July 8 to August 12, 1965, when the writer was assisting J. P. Ryder in Canadian Wildlife Service studies of Ross' Geese (*Anser rossii*) in the Perry River area, Northwest Territories (67° 42' N., 102° 15' W.). A study of the chronological events in the life history of this species was not made; however, fragmentary data were obtained from different nests during the duration of our stay and this information is supplemented by observations of other authors. A detailed description of the geography of the Perry River area is given by Hanson, *et al* (1956).

The American form of *Buteo lagopus* is said to be dimorphic or polymorphic (Cade, 1955), that is, there occurs a "light phase" and a "dark or melanistic phase" due to the degree of melanic pigmentation of the plumage. The Rough-leg shows a wide range of color variation from a nearly uniform sooty plumage to a light brown one. Gavin (1947) recorded only the "light phase" in the four years he spent in the Perry River area. Hanson, *et al* (1956) saw one "dark phase" bird among six pairs observed in 1949 and I saw three dark birds out of 45 seen in 1965.

Gavin (1947), Hanson, *et al* (1956), Aleksiuks (1964) and Sealy (1966) all reported this species to be a common breeding bird in this area. Hanson, *et al*, thought "the nesting density of this species was probably about one pair for every 5-10 square

miles of country" in 1949. The first arrival date in 1963, according to Aleksiuks (1964), was on May 22, the Rough-leg being one of the first species to arrive back from the wintering ground.

Nesting Habits:

Rough-legs breed on the open tundra, placing their nests on the steepest sides of Precambrian outcroppings. It is interesting to note that 30 per cent of the Rough-leg nests found (including three found by Hanson, *et al*, 1956), were placed on the colder, windswept, north-facing sides of the outcroppings (see Table 1). This selection may provide greater safety from predators, which could easily climb many of the gentler south-facing slopes.

The nests, constructed of branches of Arctic willow and Arctic birch, and lined with grasses, are bulky structures measuring on an average 30 inches by 18 inches in diameter and 10 inches in depth (four nests in sample). One nest was placed on top of four previously constructed nests.

TABLE 1. Nesting habits of the Rough-legged Hawk, Perry River, N.W.T., 1965.

Direction faced by nest	Number of nests	Per cent
North	6*	30.0
East	4	20.0
South	2	10.0
West	8	40.0
	—	—
	20	100.0
Height of nest		
10 to 15 feet	9	52.9
16 to 20 feet	2	11.8
21 to 25 feet	2	11.8
26 to 35 feet	1	5.9
36 to 45 feet	3	17.6
	—	—
	17	100.0

* Sample includes three north-facing nests found by Hanson, *et al* (1956).

Hanson, *et al*, found one nest “consisting of over ten different layers of willow twigs representing about as many successive annual nestings, perhaps by the same pair.”

Egg-Laying, Incubation and Brood Size:

A nest containing one egg was found by Aleksiuk (1964) on June 6, 1963; on June 15, it contained five eggs. In the nests we observed, incubation was well under way when our party arrived on July 8, 1965. According to Burns (1915), the incubation period of the Rough-leg is 28 days.

The mean clutch in a sample of 17 nests was 3.3 with a range of two to five. In a sample of three nests in 1963, Aleksiuk (1964) recorded a mean clutch size of five with a range of four to six. The average number of downy young in 1965 was 2.8 per nest; the number successfully fledged is not known. The average hatching date for four nests in the Perry River area in 1965 was July 24 (range July 17-30). McEwen (1957) reported a clutch of Rough-legs hatching on July 8, 1950, at Bathurst Inlet, about 150 miles west of Perry River.

Nesting Success:

Fragmentary data are available from 17 nests though complete records concerning nesting success are lacking. These data are summarized in Table 2. Of 56 eggs laid, 48 or 85.7 per cent hatched (two nests containing three eggs and two eggs respectively, were deserted and three other nests each contained one unhatched egg). Due to our departure on August 12, fledging success data were not obtained, but it is thought that it would be comparable to the hatching success, for predation upon their young appeared to be negligible. Forty-three young were banded, the young being about three weeks old at the time of the banding, indicating mortality had not occurred up to this age (one nest with four young was inaccessible and a fourth young in another nest could not be reached).

Food habits

Observations showed the Parry's Ground Squirrel (*Citellus parryi*), Brown Lemming (*Lemmus trimucro-*

TABLE 2. Reproductive success of the Rough-leg, Perry River, N.W.T., 1965.

Number of nests	17
Eggs laid	56
Downy young	48
Average number of eggs per nest	3.3
Average number of young per nest	2.8

natus), and Collared Lemming (*Dicrostonyx groenlandicus*) were preyed upon by Rough-legs, with the Brown Lemming making up 83.3 per cent of all the mammalian food items found in their nests. Other available mammalian prey in the area were the Arctic Hare (*Lepus arcticus*) and the Red-backed Mouse (*Clethrionomys rutilus*). The Lapland Longspur (*Calcarius lapponicus*) was the only bird found in a nest (Sealy, 1965). Other available avian prey were numerous shorebirds, Horned Larks (*Eremophila alpestris*), American Pipits (*Anthus spinoletta*), Savannah Sparrows (*Passerculus sandwichensis*) and Snow Buntings (*Plectrophenax nivalis*).

McEwen reported that litter about the nests of Rough-legs found at Bathurst Inlet in 1950 “consisted mainly of lemming fur, bones of a caribou, dog, and ground squirrel, and a few feathers of snow bunting. Two lemmings were found below one nest. The size of the pellets were about one inch by three inches. They consisted mainly of lemming fur and bones.”

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A BREEDING BIRD SURVEY ON UNCULTIVATED GRASSLAND AT REGINA

by **Hugh** and **Joyce Smith**, 1357 Minto Street, Regina

During the summer of 1965 (May to August) we conducted a breeding-bird survey on a fenced prairie pasture of approximately 40 acres situated on the western outskirts of the city of Regina (NW $\frac{1}{4}$ 27-17-20w2). The area selected was not known to have been cultivated and for this season was being used for grazing eight to 12 horses. After obtaining the permission of the owner we plotted the pasture out in a 100 foot grid. All intersections were staked and marked. All of the nests located were paced off and plotted on a graph map.

Miss Gwen Jones, a biology student at the University of Saskatchewan, Regina Campus, identified the flora in the study area, compiling a list of 48 species. The most conspicuous vegetation was western snowberry, *Symphoricarpos occidentalis* Hook., in a number of concentrated patches, and pasture sage, *Artemisia frigida* Willd., which was evenly distributed throughout the area. Also common in their season were crocus anemone, *Anemone patens* L.; scarlet mallow, *Spheralcia coccinea* (Nutt.) Piper; and wild flax, *Linum lewisii* Pursh. Other prominent species included crested wheat grass, *Agropyron cristatum* (L.) Gaertn.; foxtail barley, *Hordeum jubatum* L.; low prairie rose, *Rosa arkansana* Porter; slender wheat grass, *A. trachycaulum* (Link) Malte; and speargrass, *Stipa comata* Trin. and Rupr.

The plot was bounded on the immediate north, south, and east by similar habitat. The outer boundaries included a railroad line and a grain field on the north, a grid road and Wascana Creek (elevation 1,850 feet) on the south, and an unworked but previously cultivated field grown to weeds on the east. A rectangular plot extending from the southwest corner of the study area contained habitat similar to that of the study area. A cultivated plot of oats formed the north-

west boundary and to the west of this was a farmhouse and buildings, including a dugout.

The study area was flat prairie of elevation 1,900 feet. It was crossed by a single row of deep ruts from an old trail.

Reports obtained from the Regina Airport Weather Office gave the following coverage over the study period. Normals are based on a 30-year period from 1931 to 1960. Total precipitation of 3.74 inches (normal 1.59 inches), and a mean wind velocity of 18.9 mph (normal 14.0 mph) gave Regina its wettest May in 33 years and the windiest May on record. A high of 78° on the 12th and 16th and a low of 26° on the 3rd made the mean monthly temperature 49.4° F (normal 52.2°). Heavy snow May 25 and 26 left 5.1 inches, the total for the month. This compares with a normal total of 0.9 inches. Total precipitation in June was 4.96 inches (normal 3.28 inches). The mean monthly temperature was 60.5° F (normal 59.5° F) with a high of 87° on the 11th and a low of 37° on the 8th. 1965 had the wettest combined May-June in 59 years. In July a high of 91° on the 28th and a low of 47° on the 9th and 25th gave a mean monthly temperature of 66.1° F (normal 66.7° F). Total precipitation for July was 1.69 inches (normal 2.16 inches).

Daily visits were made to the study area from May 1 to June 11 and from June 25 to August 15, 1965. All visits were made between 10:00 a.m. and 8:00 p.m., each visit lasting from one to three hours.

A count taken at noon on July 9 recorded: Chestnut-collared Longspur males 33, females 16; Lark Bunting males 24, females 3; Gray Partridge 2; Brown-headed Cowbird 9; Clay-colored Sparrow 2. On this day (July 9) we had the following numbers of active nests under observation:

Chestnut-collared Longspur 9, and Lark Bunting 2. The greatest number of active nests under observation for each nesting species on a given day was: Chestnut-collared Longspur 12 on July 11, 12, and 13; Lark Bunting 4 on July 13; Western Meadowlark 2 from June 6 to June 8; Clay-colored Sparrow 3 on July 29.

Visitors to the study area included one or usually more Killdeer, Gray Partridge, Sparrow Hawk, Brewer's Blackbird, Common Crow, Franklin's Gull, Ring-billed Gull, American Avocet, Red-winged Blackbird, Eastern Kingbird, Western Kingbird, Mourning Dove, Vesper Sparrow, House Sparrow, Robin, Rock Dove, Barn Swallow, and a buteo hawk which was seen alone on several occasions. Other fauna seen on the study area were White-tailed Jack Rabbit, various mice, and Richardson's Ground Squirrel.

The most abundant nesting species on this pasture was the Chestnut-collared Longspur (*Calcarius ornatus*) for which 38 nests were found. These nests ranged in diameter from 2 to 3 inches, and in depth from 1½ to 2½ inches. One nest site consisted of sparse grass 4 inches deep, bared to form an open patch of earth 2½ inches in diameter. There was no nest structure and the nest was unsuccessful. All of the remaining 37 nests were well concealed in grass, rose, sage or snowberry, ranging in depth from 4 to 10 inches. The first male was seen on the study area on April 24, and the first nest was found containing one egg on May 13. The last nest was vacated August 7 and adult longspurs were last seen on the study area on August 15.

A total of 141 eggs were laid in the 38 nests we found. Eleven nests were unobserved for a two-week period and their nesting success was not determined. Of the remaining 27 nests only nine successfully fledged young (36 eggs laid, 32 eggs hatched, 23 young fledged). One unsuccessful longspur nest was parasitized with two cowbird eggs. On another occasion two Chestnut-collared Longspur adults were

observed feeding a young cowbird fledgling. No nest was found for this pair of longspurs.

The second most abundant nesting species on this pasture was the Lark Bunting (*Calamospiza melanocorys*) for which seven nests were found, ranging in diameter from 2¾ to 4 inches, and in depth from 1¾ to 2 inches. The nests were on the ground located in the deeper vegetation (7 to 24 inches deep) and usually in western snowberry. Although Lark Buntings were first noted on the pasture on May 19, it was not until July 1 that the first nest was found. In the seven nests there were 34 eggs of which 16 hatched and 11 young were known to have fledged.

During this study we found two Lark Bunting nests that had been parasitized by the Brown-headed Cowbird. One nest contained three cowbird eggs along with four Lark Bunting eggs. The other nest contained two cowbird eggs and four Lark Bunting eggs. Both of these nests were unsuccessful, having been destroyed by an unknown predator. The Lark Bunting is not included in the list given by C. Stuart Houston of Saskatchewan species known to be parasitized by the Brown-headed Cowbird (see Houston's review of *Host relations of the parasitic cowbirds in Blue Jay*, 24:44). We have since learned, however, that R. W. Nero (pers. comm., 1966) found a Lark Bunting nest with three eggs on July 9, 1964 in this same study area — on July 10 this nest held only two eggs; on July 12, two Lark Bunting eggs plus one cowbird egg, but these eggs were cold and the nest appeared deserted (at 9:00 a.m.).

Nesting observations were made in this study area for four other species of birds: Western Meadowlark (*Sturnella neglecta*), Horned Lark (*Eremophila alpestris*), Mallard (*Anas platyrhynchos*) and Clay-colored Sparrow (*Spizella pallida*). One Western Meadowlark nest was found in the study area and two more just beyond. All these nests were built on the ground, concealed in



Lark Bunting nest in Regina, 1965. The 7 eggs include 4 Lark Bunting eggs and 3 Brown-headed Cowbird eggs.

grasses 9 to 14 inches deep. A total of 12 eggs were laid of which six eggs hatched and three young fledged. Two of the nests were complete failures and the three successful fledglings were all from one nest in which only three eggs had been laid. A single Horned Lark nest was found, similar in construction and habitat to the Chestnut-collared Longspur's. From this nest were fledged two young from three eggs hatched of three eggs laid. These young were fledged on May 23 and no further Horned Lark nests were found on the study area that season. Three Clay-colored Sparrow nests, suspended 10 to 18 inches above the ground, were all found in snowberry 18 to 24 inches high. There were eight eggs laid, five young hatched and fledged. One nest of three eggs was a complete failure. One Mallard egg was found in snowberry 20 inches deep. No nest structure was apparent, and the egg was abandoned after the female was flushed on two successive days.

On two occasions a Richardson's Ground Squirrel was seen being

chased by a male Chestnut-collared Longspur from the bird's nest site. The large number of ground squirrels seen on the study area would indicate that they were serious predators. We considered the presence of the horses grazing on the pasture to be a possible source of a small percentage of nest failure. One Chestnut-collared Longspur and one Lark Bunting nest were each thought to have been trampled, and one Clay-colored Sparrow nest was pushed over, spilling the eggs.

A unique aspect of this study area is its situation within the city limits. The pasture was being surveyed by a survey crew most of the summer. Owing to urban expansion and the present proximity to residential areas it is not likely the area will remain as grassland.

Financial support for this study was provided by the University of Saskatchewan Regina Campus through a grant to Dr. Robert W. Nero. We wish to thank Dr. Nero for encouraging us to undertake this survey.

NORTHERN RECORD: LARK BUNTING NESTING COLONY NEAR SASKATOON, 1966

by **Robert R. Cohen**, and **Maureen Rever**, U. of S., Saskatoon

The *A.O.U. Check-list of North American Birds* (1957) gives the following northern breeding boundary for the Lark Bunting (*Calamospiza melanocorys*): southern Alberta (Waterton Lakes Park, Castor), southern Saskatchewan (Skull Creek, Indian Head), and southeastern Manitoba (Brandon). However, many sight records of this species have been made to the north of this boundary. Sightings were particularly common during 1965 and 1966, which strongly suggest a definite northward extension of the species' breeding range in Saskatchewan. In June of 1966 a large breeding colony of the species was located near Clavet (14 mi. S.E. of Saskatoon); this appears to be a northern breeding record for the species.

Records of Lark Buntings seen during the breeding season have been reported rather sporadically from several northern Saskatchewan and Alberta locations. One individual was seen near Prince Albert in 1909 (Ferry, 1910), and another near Carlton in 1939 (Houston and Street, 1959). Street (Houston and Street, 1959) regards the species as a rare straggler in the Nipawin area; a male was seen near Nipawin by Street in 1946 and another at Torch River in 1950 by C. Stuart Francis (Francis, 1950). Kvinge saw approximately 10 pair near Hawarden, in 1960, and in the same year the first sight records were made by J. B. Gollop and R. Folker in the Saskatoon area (Roy, 1960). The March 1965 *Blue Jay* (page 27) reported that Anweiler and Carson saw a male near Tisdale in 1964, and individuals have been seen near Dewberry, Alta. (60 mi. N.W. of Lloydminster) and at Kinloch (22 mi. N.E. of Kelvington). Roy (1964) states that the species was common in the Elbow area of the South Saskatchewan River (50 to 100 mi. S. of Saskatoon) from 1935 to 1946 and again in the last several years.

Included in the files of the Prairie Nest Record Scheme of the Saskatchewan Natural History Society are several nest records from the Regina and Moose Jaw area from recent years. Nest records are also included from Kyle, Sask. (by R. Fyfe in 1959), North Portal (by R. Lein in 1960), Skull Creek (by S. Mann in 1961, 1963), and Masefield (by D. Chandler, 1963).

A distinct influx of Lark Buntings in the region south of Saskatoon was noted in 1965: Fifty-six birds were seen in the area of Goose Lake, near Delisle (Gollop *et al*, 1965), and Slimmon (pers. comm.) reports that two nests were found in a colony of five or six pairs near this area, at Swanson (approximately 40 mi. S.W. of Saskatoon).

Near the first of June, 1966, several Lark Buntings were sighted in the Saskatoon area (Gollop, 1966). The breeding colony near Clavet was located shortly thereafter. On June 15 we led a group of University students to the area and located a nest with three eggs. At that time the breeding colony appeared to extend over an area approximately 1½ mi. by 1½ mi. lying on both sides of Highway 14 to the west of Clavet. The area consisted mainly of summer-fallow fields, with scattered patches of grassy prairie, brome-alfalfa hay meadow, and groves of snowberry, rose, and aspen. We estimated that at that time approximately 175 males were present in this area.

Singing males appeared to be most abundant in the northeast corner of the above-described area, and this is where the first nest was located. We returned to this location on June 18 with drag-ropes and found 7 additional nests. Numbers of eggs were 3 (plus 2 eggs of the Brown-headed Cowbird, *Molothrus ater*), 5, 5, 4, 3, and 5. On this date the previously-located nest contained 6 eggs. A ninth

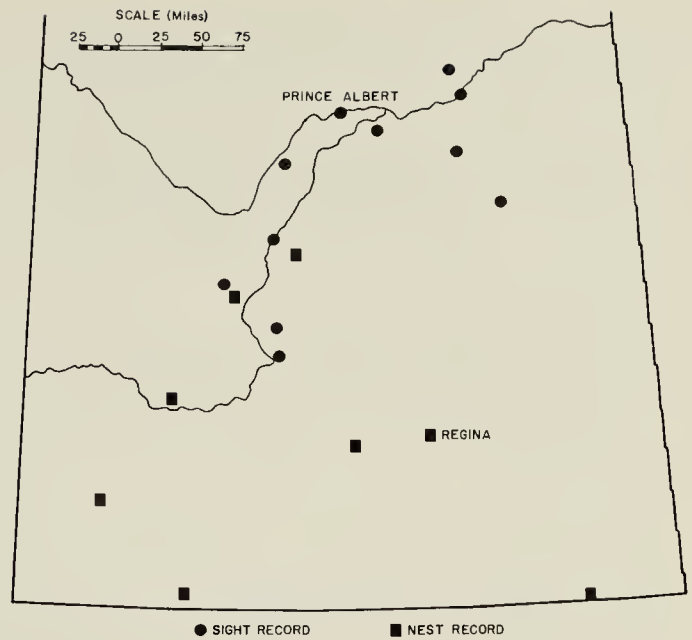
nest, with 2 eggs, was found in the area on June 24, and at that time the first nest contained 4 young. A tenth nest was found on July 2, with 4 young. On that date the young of one nest were banded by J. Slimmon.

According to the relative size of the area covered in searching for nests, the number of nests found, and the number of singing males within this area, we estimated that at least 100 nests existed in the entire colony.

The area in which most nests were found had been plowed by Mr. Rudy Daniels, owner of the eastern portion of the colony area, during the first week in June, after it had developed a moderate growth of Flixweed (*Descurainia sophia*). Substantial rains followed the date of plowing, so that by June 15 growth of this plant was again abundant. However, the overall appearance was that of bare turned soil with rows and hummocks of dead shoots. Most nests were located in depressions on the north side of such hummocks, and were constructed of grass. The nests and their locations therefore corresponded closely to the description by Pearson *et al* (1917) as typical for this species.

Whatever nesting success the birds had was partly due to the friendly cooperation of Mr. Daniels, who was quite interested in the birds and in our survey. (According to him, the species had not been common in this area in previous recent years.) He offered to refrain from plowing the located nest areas until nesting was completed. Nevertheless, other factors appeared to take their toll of birds. A number of nests were found to be vacant on June 24 and the density of adults appeared to be reduced. A large part of this destruction may have been due to the heavy rains during the third week of June. In addition, many of the birds were probably taken by Swainson's Hawks (*Buteo swainsoni*) which we saw on a few occasions in the area. Mr. Daniels stated that the hawks had nested on the area in recent years and probably did so again this year.

By July 16 all nests were vacant.



On July 20 the birds, including a substantial number of fully-fledged juveniles, were still common on the area, and several specimens were collected for the Department of Biology Museum by R. Lein and ourselves.

Nests of three other species were found during our surveys of the colony: five nests of Horned Lark (*Eremophila alpestris*), two of Western Meadowlark (*Sturnella neglecta*), and one of Wilson's Phalarope (*Steganopus tricolor*). Two of the Horned Lark nests contained cowbird eggs when they were found on June 18. Two other species common in the colony area were the Clay-colored Sparrow (*Spizella pallida*) and the Vesper Sparrow (*Pooecetes gramineus*).

The University personnel who worked on this project with us were P. Bhattacharya, D. Derby, W. Fysh, S. Gibney, W. Hamilton, N. Hellman, G. Michalenko, M. Swift, B. Wright, and S. Van Vliet.

In summary, a large breeding colony of the Lark Bunting was located in June of 1966 just west of Clavet, Sask. Ten nests were found, and it is estimated that at least 100 nests existed in the entire colony. This appears to be a northern nesting record for this species. The relative abundance of the species in the last two years in areas within 50 miles of Saskatoon suggests that a northward extension of their breeding range may be taking place.

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RECENT OBSERVATIONS OF THE FIELD SPARROW IN MANITOBA

by **Martin McNicholl**, 1281 Valour Road, Winnipeg

In the early afternoon of October 3, 1965, when I was carrying out a routine check of the birds in Brookside Cemetery, Winnipeg, I was surprised to hear a bird in song. I could not recall ever having heard the song before, but believed it to be one of the small sparrows. Anxious to identify the author of a bird-song in October, I immediately headed towards the sound. My suspicions of a small sparrow were further strengthened on finding that the song came from an area of the cemetery where native prairie with tall grasses still remains almost untouched except for a fairly large brush pile and a few small trees. This is a favorite spot of migrant sparrows.

On spotting the singer, I at first thought it was a Tree Sparrow (*Spizella arborea*). Suddenly, however, I realized that the bird had a distinctly pink bill. Suspecting a Field Sparrow (*Spizella pusilla*), I noted the following features through 8x42 binoculars: "pink bill, clear greyish breast with no breast spot, whitish wing bars, greyish-brown nape, reddish in wings and upper regions (and cap), and whitish throat." The lack of a breast spot was not entirely convincing, as I have seen Tree Sparrows in the fall without this very characteristic feature.

Moreover, I could not be positive that the bird had a white eye-ring, although I thought it did. Suddenly, however, the bird moved closer to me, enabling me to make out the eye-ring clearly. I was then convinced that I was watching a Field Sparrow. My conclusion was verified later in the afternoon by Mr. Vere Scott.

This observation again opened the question of the status of the Field Sparrow in Manitoba. E. E. Thompson (= Ernest Thompson Seton) never recorded it personally, but in his *Birds of Manitoba* (1890) he recorded the following statements: "Very rare summer resident. Red River Settlement: Breeding (D. Gunn) Winnipeg: Summer resident; tolerably common (Hine). Have seen it west of Winnipeg (R. H. Hunter). Qu'Appelle: common summer resident; breeds; arrives April 15 (Guernsey)."

The above observations were believed by John Macoun (Macoun and Macoun, 1909) to be mostly, if not completely, in error; Macoun was convinced that these observers were probably referring to the Clay-colored Sparrow (*Spizella pallida*), which, although abundant in southern Manitoba, was not mentioned by Guernsey, Hunter or Hine.

The Field Sparrow was not definitely recorded in Manitoba until

June 30, 1960, when Harold V. Hosford found a nest in Charleswood (at Winnipeg). The nest contained one Field Sparrow egg and one egg of the Brown-headed Cowbird (*Molothrus ater*). The cowbird egg hatched on July 6, and the nestling was fed until July 15. The Field Sparrow egg did not hatch. It was collected by Richard W. Sutton on July 14, and was found to contain a dessicated embryo about six days old. The Field Sparrow was definitely identified by Hosford on July 3, and was confirmed by Angus H. Shortt on July 6, and Sutton on July 14 (Hosford, 1962; Mossop, 1960).

Although no details seem to be available of an observation of a Field Sparrow at Wawanesa on May 14, 1961, by Ed Robinson, his long-standing reputation leaves little doubt as to the validity of this record (Mossop, 1961).

On September 20, 1964, Roy Simmons was surprised to discover a Field Sparrow in his banding traps in St. Vital (at Winnipeg). This startling find was verified by Angus Shortt. To add to the excitement, a second Field Sparrow entered his traps on the same day. A third Field Sparrow was trapped by Simmons on September 29, 1965 (Hosford, 1964 and 1965) about a week or two before we observed the bird in Brookside Cemetery.

This sudden series of observations in the first half of this decade raises a number of questions. Has this species always occurred in Manitoba and simply been overlooked? This seems unlikely unless it has been here in very small numbers. Possibly the species has fluctuated in numbers over the years. If some of the early records are valid, then perhaps this species was more common in Manitoba before the turn of the century. Thinking that perhaps observers in Minnesota and North Dakota might have recorded a northern range extension, I wrote to Robert B. Janssen and Robert E. Stewart for information on this species; both reported an absence of evidence for this situation.

The latest A.O.U. Check-list (1957) gives the nearest breeding record to Manitoba (of the race *Spizella pusilla pusilla*) as Nisswa in central Minnesota, and (of the race *S.p. arevacea*) Charlson and Minnewauken in northern North Dakota.

The only record for Saskatchewan supposedly is of one banded on October 6, 1946 at Burnham (in the extreme southwestern part of the province) by Arthur Ward (1952), but this record is believed to be uncertain (pers. corres., C. S. Huston to R. W. Nero, 1958), and this species is not listed for Saskatchewan. However, as the Field Sparrow breeds in northern Montana and North Dakota, observers in southern Saskatchewan should watch for it.

Both Mr. Hosford and I felt that the birds we saw resembled the Tree Sparrow much more strikingly than the Chipping Sparrow (*S. passerina*); and that the white eye-ring, although very clear at close range, is a more difficult field mark to see than other features, e.g., the pink bill which is readily seen.

I would like to thank Mr. Harold V. Hosford, Mr. Robert B. Janssen, Dr. Robert W. Nero, Mr. Roy Simmons, and Dr. Robert E. Stewart for information they provided for this note.

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COOPERATIVE SPRING MIGRATION STUDY, 1966

Compiled by MARY HOUSTON 863 University Drive Saskatoon	BLADWORTH P. Lawrence Beckie	DESCHAMBAULT LAKE Rick Sanderson	DILKE J. B. Belcher	DUNDURN Harry Harder	ERINFERRY Mrs. E. A. Dodd	ESK R. F. Klatt	FORT SAN E. M. Callin	INDIAN HEAD Lorne Scott	ISLAND FALLS Gordon H. Dash	KELVINGTON Brian Irving	KINISTINO P. Wojcichowsky
Whistling Swan		My15	Ap14	Ap12		Ap23	Ap12	Ap23		Ap25	Ap23
Canada Goose		Ap20	Mr30	Ap12	Ap 1	Mr18	Mr21	Ap 2	My22	Mr 29	Ap10
Mallard	Ap 6	Ap20	Ap 3	Ap 2	Ap 6	Mr23	Mr30	Mr31	My 5	Ap 1	Ap 2
Pintail	Mr30	My 4	Mr29	Mr30		Mr29	Mr30	Mr29		Ap 1	Ap 2
Marsh Hawk	Ap12	Ap21	Mr27	Ap 2		Ap11	Mr21	Mr16		Ap 7	Ap20
Killdeer	Ap11	My 4	Mr30	Ap18	Ap25	Ap14	Mr30	Ap 2	My21	Ap 4	Ap15
Common Snipe		My 5					My 5	Ap25		My 4	My19
Mourning Dove	My 4	My 3	My 3	My 4	Ap27	Ap30	Ap18	My 1		Ap24	My17
Common Nighthawk	My28	My30	My27		My 6	Jn 6	My24	My31			My15
Ruby-throated Hummingbird		My26					My22				My27
Yellow-shafted Flicker	Ap21	My 5	Ap22	My 1	My27	Ap24	Ap22	Ap23	My12	Ap25	My 3
Eastern Kingbird	My22	My23	My22	My28	My28	My26	My11	My16		My21	My24
Great-crested Flycatcher											
Eastern Phoebe		May12			Ap24		My14	My29	My11	Ap30	My 2

Barn Swallow	My 5	My26	My 5	My 8	My 6	My 7	My 7	My 6	My21	My 7	My24
Purple Martin						Jn 11	My22	Jn 8			My26
Common Crow	Mr 15	Mr 27	Mr 14	Mr 16	Mr 26	Mr 11	Mr 11	Mr 13	Ap 9	Mr 20	Mr 25
House Wren	My21		My27			My27	My21	My23		My26	My26
Catbird	My31					My28	My26	Jn 3		My27	My26
Brown Thrasher	My22		My12	My16		My18	My15	Jn 2			
Red-eyed Vireo		Jn 4					My31	My20	Jn 3		My 2
Black-and-white Warbler		My13					My12	My19			
Tennessee Warbler		Jn 2					My22		Jn 3		
Yellow Warbler	My25	My19	My24		My28		My10	My15	My29	My13	My24
Myrtle Warbler		My 2		My19	Ap27		Ap26	My 9	My14	Ap30	My14
Blackpoll Warbler		My28					My22				
Ovenbird		My28					My31				
American Redstart		My28					My22				Jn 3
Bobolink			May27			Jn 18		Jn 10			
Redwinged Blackbird	Ap 4	My 4	Ap 3	Ap15	My 2	My 1	Ap 4	Ap 2	My14	Ap21	Ap25
Baltimore Oriole	My24		My25	My22		My27	My22	My23		My21	My24
Rose-breasted Grosbeak		May23			My15		My20	My29			My25
American Goldfinch	My28	Jn 4	My30	My24		My30	My21	My23		My31	Jn 3
Slate-colored Junco	Mr30	Ap14		Ap 2	Ap 7	My16	Mr18	Ap 2	Ap17	Ap 3	Ap24
Chipping Sparrow	My 5	My12		My 8	My 6		My 4	My 4	My15	My21	My 5
White-crowned Sparrow	My 3			My 8	My 6		My 1	My 4	My15	My 5	My14
White-throated Sparrow	My 5	My11		My 8	My 6		My 3	My10	My21	My 7	My10

COOPERATIVE SPRING MIGRATION STUDY, 1966

	LUCKY LAKE Mrs. E. C. Boon	MOOSE JAW M.J. Nat. Hist. Soc.	NIPAWIN M. G. Street	REGINA R.N.H.S.	SASKATOON J. B. Gollop & N.H.S.	SHEHO William Niven	SKULL CREEK S. A. Mann	SPIRIT LAKE Wm. Anaka	YELLOW CREEK Bohdan Pylypec	YELLOW CREEK Derwent Mazur	YELLOW GRASS Mrs. R. Peterson
Whistling Swan	Ap 5		Ap24	Ap 2	Ap13	Ap22	Ap 4	Ap23		Ap18	Ap 8
Canada Goose	Mr29	Mr15	Ap 3	Ap 2	Mr31	Mr24	Mr14	Mr16	Ap 1	Mr27	Ap 2
Mallard	Mr28	Mr15	Ap11	Mr27	Mr30	Ap 2	Mr21	Ap 8	Ap 5	Ap 3	Ap 2
Pintail	Mr28	Mr15	Ap11	Mr25	Mr19	Ap 4	Mr26	Ap 7	Ap 2	Ap 3	Ap 2
Marsh Hawk		Mr20	Ap20	Mr24	Mr15	Mr24	Mr21	Ap 2	Mr31	Ap 2	Ap21
Killdeer	Ap 4		Ap23	Ap 9	Mr28	Ap14	Mr24	Ap 9	Ap15	Ap 2	Ap24
Common Snipe				My 1	Ap23	My 2	Ap24	Ap23	Ap23	My 4	
Mourning Dove		My 1		Ap18	Ap23	Ap20	Ap25	Ap24	My 6	My 4	Ap23
Common Nighthawk			Jn 3	My29	My31	Jn 4		Jn 7	Jn 6	Jn 4	
Ruby-throated Hummingbird			My29			Jn 10		Jn 3	My27	Jn 2	
Yellow-shafted Flicker			Ap24	Ap21	Ap21	Ap16	Ap24	Ap23	Ap24	Ap23	My 8
Eastern Kingbird	Jn 4		My29	My21	My14	My23	My15	My29	My22	My25	My25
Great-crested Flycatcher								My28			My21
Eastern Phoebe			My 8	My 2	My 4	My 6		Ap24	My 1	My29	Jn 5

Barn Swallow	My 6		My 8	My 6	My 7	My 5	My 11	My 5	My 9	My 10	My 21
Purple Martin				My 7	My 14	My 8			My 13	My 22	
Common Crow	Mr 17	Mr 17	Mr 18	Mr 16	Mr 15	Mr 15	Mr 17	Mr 16	Mr 25	Mr 15	Mr 31
House Wren		My 30	My 16	My 7	My 10	My 21	My 14	My 20	My 21	My 6	My 23
Catbird			My 22	My 18	My 3	My 21	My 31	My 24	Jn 9	My 31	My 30
Brown Thrasher	My 31			My 10	My 11	My 17	My 17			My 25	My 20
Red-eyed Vireo			Jn 1	My 28	My 14	My 26	My 26	My 31	Jn 2		
Black-and-white Warbler		My 7	My 23	My 7	My 7				My 21		
Tennessee Warbler			My 23	My 7	My 21	My 22		My 22	My 25		
Yellow Warbler		My 8	My 21	My 4	My 7	My 21	My 20	My 22	My 16	My 26	My 7
Myrtle Warbler		My 4	My 5	Ap 8	Ap 26	My 7		Ap 24	My 6	My 7	Ap 30
Blackpoll Warbler		My 21	My 23	My 11	My 14	My 23			My 23		Jn 5
Ovenbird				Ap 29	My 28		My 30	My 28			
American Redstart			My 23	My 15	My 31				My 29		
Bobolink				My 15	My 22	My 21	Jn 20				
Redwinged Blackbird	Ap 3		Ap 28	Ap 5	Ap 9	Ap 10	Mr 29	Ap 9	Ap 22	Mr 30	Ap 25
Baltimore Oriole	My 31		My 23	My 12	My 14	My 21	My 8	My 24	My 25	My 26	Jn 1
Rose-breasted Grosbeak			My 25	My 15	My 14	Jn 1		My 17	My 21	My 31	
American Goldfinch	My 31	My 27	Jn 3	My 22	My 26	My 26	My 25	My 27	My 29	My 31	My 27
Slate-colored Junco	Ap 16	Ap 3	Ap 15	Mr 20	Mr 26	Mr 30	Mr 24	Mr 29	Mr 27	Ap 2	Ap 15
Chipping Sparrow		My 8	My 5	My 3	My 7	My 16	Ap 24	My 10	My 10	My 22	My 23
White-crowned Sparrow	My 3	My 4	My 7	My 1	My 2	My 5	Ap 26	My 13	My 11		
White-throated Sparrow		My 7	My 12	Ap 26	My 4	My 5	My 8	My 5	My 5		

BARRED OWL NEST RECORD FOR ALBERTA

by **Edgar T. Jones**, 6115 - 141 Street, Edmonton

What appears to be the first authentic record of a Barred Owl (*Strix varia*) nest in Alberta was found by Rod Burns and myself at Edmonton on May 28, 1966. Although the Barred Owl in recent years has been believed to breed in Alberta, no actual nest site has been reported (Salt and Wilk, *Birds of Alberta*, revised ed., 1966).

The nest site, as is typical for the Barred Owl, was in a hole 28 to 30 feet above the ground in a recently deceased black poplar. A Saskatchewan nest, which was discovered on June 4, 1961, was 18 feet high in a black poplar stub (*Blue Jay*, 19:114-115). The nest cavity which was about 18 inches in depth, appeared to have been used for several years for in it there was a thick layer of mouse remains. The nest contained three young, approximately half-grown and just commencing to feather. The owlets were banded. When the tree was first climbed, one adult sat silently in an adjacent tree making no attempt to drive off the intruder, or to decoy

the intruders away by "broken-wing acts" such as Long-eared and Great Horned Owls sometimes perform. These birds have probably been nesting in this cavity for at least the last four years, for I have heard and seen them regularly during this time.

It is worth noting that within a 500 yard circle of the Barred Owl nest site we found a Great Horned Owl nest with young and a Cooper Hawk nest with three eggs.

There is little doubt in my mind that the Barred Owl nests regularly in the more heavily wooded areas of Alberta. The species has been seen by me in the Timeau, Jasper, and Rocky Mountain House areas, and evidence of their presence has also been seen in several other regions. Several specimens have also been sent in over the past few years. Undoubtedly, other nests will be found in Alberta as more interested naturalists explore the remote sections of the province.

A BAY-BREASTED WARBLER NEST RECORD FOR ALBERTA

by **Edgar T. Jones**, Edmonton

The Bay-breasted Warbler (*Dendroica castanea*) was added to Alberta's breeding list when a nest with three young was found and photographed near Skeleton Lake in the Boyle region on July 9, 1965. Rod Burns of Edmonton, a keen youngster, was on this trip with me when this record was established. I am sure the bird is not too rare a breeder in the more remote sections of the province, for I band a number of them during the fall migration each year at Edmonton. In the fall of 1965, for example, I banded four which were trapped on my property. This species is listed by Salt and Wilk (*Birds of Alberta*, revised ed., 1966) as a scarce summer resident across the northern half of Alberta.



Photo by Edgar T. Jones

Young Barred Owls

LONG-TAILED JAEGER IN ALBERTA

by Ian R. Halladay, 1321 Cameron Ave. S.W., Calgary

On the 11th and 12th of June, 1966 some members of the Calgary Bird Club visited Cypress Hills Provincial Park in Alberta where we spent an enjoyable but somewhat damp week-end. While a variety of interesting birds was seen by the club's members during the week-end, the highlight of the trip was a Long-tailed Jaeger (*Stercorarius longicaudus*). The jaeger was first seen about 2:30 p.m. on June 12 at the east end of Elkwater Lake by Nora and Ian Halladay and shortly thereafter by Elizabeth and Derek Beecham. During the time the jaeger was observed it spent much of its time walking about on the edge of the highway from where it would take off for short flights along the lake margin before returning to the highway. A 35 mm. colour transparency was taken of the jaeger while it was sitting on the highway shoulder. The photograph shows the bird to be definitely a jaeger and with some magnification the long central tail feathers are discernible. Robert R. Taylor, who has observed this species on its nesting grounds, has confirmed the identification.

In the *Birds of Alberta* by Salt and Wilk, 2nd ed., 1966, the Long-tailed

jaeger is listed as a rare migrant. There are five previous sight records given for Alberta: three occasions between 1932 and 1934 at Baptiste Lake; Lake Athabasca on June 13, 1933; and two near Edmonton on June 3, 1965. The present sighting is the sixth and apparently the first to be documented.

It is interesting to note that the records for which we have dates are in the period June 3 to 13. It would seem possible that in early June the Long-tailed Jaegers moving north in the Pacific Ocean have reached this latitude and some individuals may stray inland. At Kazan Lake in central Saskatchewan, one was closely observed by T. E. Randall on June 13, 1942 (*Blue Jay*, 20:60-72). On Lake Athabasca in Saskatchewan and therefore closer to the breeding grounds, R. W. Nero reports sight records for July 1, 1959 (one), and July 25, 1962 (two) (*Birds of the Lake Athabasca region, Saskatchewan*, 1963).

I am interested in further study of spring records of the three jaegers which occur in this region and would appreciate hearing from anyone who has such information for the Northern Great Plains area.

FEEDING WEED SEEDS TO BIRDS

by J. F. Alex, Experimental Farm, Regina

Inquiries are often made as to the advisability of using weed seeds for bird feeding stations.

If certain precautions are observed, it can be safe to feed screenings containing some weed seeds to birds. The grinding action in the bird's crop or gizzard and subsequent digestion are usually sufficient to destroy nearly all but the very hardest seeds. Birds which eat weed seeds at such feeding stations are primarily seed-eating birds. Seeds are their food. It stands to reason that, in order for the birds to gain sustenance from the seeds they eat, the seeds have to be digested.

However, a certain proportion of seeds may escape crushing in the gizzard and be passed in the excreta.

Viable seeds of wild mustard, stinkweed, knotweed, plantain, poppy and sheep's sorrel have been recovered from droppings of pigeons. Viable seeds of lamb's quarters, shepherd's purse, groundsel, chickweed, corn spurrey and narrowleaved plantain have been recovered from droppings of sparrows. Other weeds whose seeds have, at least sometimes, passed unharmed through the digestive tracts of birds include orache, common toadflax, gromwell, pale smartweed, creeping buttercup, dock, annual sowthistle, dandelion and field bindweed. The chief factors affecting the dispersal of weed seeds by birds are the palatability of the different seeds (the more palatable ones are likely to be more

completely digested) and the availability of the different seeds (when the supply of seed is plentiful, the proportion of uninjured seeds passing through the bird increases). Birds eating weed seeds at a feeding station are therefore more likely to pass viable seeds in their droppings than birds which eat fewer weeds seeds in their normal search for food.

Birds are often selective in their feeding habits. If given elevator seed screenings, some species of birds may concentrate on eating the cracked grain and leave the weed seeds, some may take only a particular group (based on size, colour or shape) of weed seeds, and others may eat a little of everything — smorgasbord style.

Before feeding elevator seed screenings to birds, several points should be considered:

1. What weed seeds are in the grain?

(a) If seeds of any of the prohibited noxious weeds (dodder, field bindweed, halogeton, hoary cress, horse nettle, leafy spurge, Russian knapweed, tansy ragwort and Tartary buckwheat) or toadflax or red bartsia are present, do not under any circumstances feed the screenings to birds. If even one of the above seeds escaped destruction in the bird and were dropped where it might start a new infestation that would be inexcusable.

(b) If primary noxious weed seeds (bladder campion, couchgrass, giant ragweed, ox-eye daisy, perennial sow-thistle, white cockle, wild mustard, wild radish or yellow rocket) or other noxious weed seeds are present consider the abundance of these weeds in the district before feeding the screenings to birds. In general, however, if seeds of a particular weed are abundant in the screenings, chances are that that weed is also common in many if not most fields in the district and the few viable seeds which would be dispersed by the birds would not materially affect the overall weed growth. Occasionally one farm may be heavily infested with a weed which occurs nowhere else in the district. If seeds of that weed are present in one lot

of screenings avoid using those screenings for bird feed and thereby avoid the risk of spreading that weed to uninfested farms.

(c) Some weed seeds may be toxic to birds. These include cocklebur, milkweed, wild tomato, vetches, purple cockle and possibly cow cockle. Ergot can also cause poisoning. Birds will not normally eat such items but if these are in abundance at a feeding station, the birds may eat lethal doses of them.

2. What birds will patronize the feeding stations?

Some tree- and brush-dwellers are not apt to venture far beyond the immediate park area. These would not likely be responsible for distributing weed seeds to any great distance from the park. Other birds may fly considerable distances in a normal day and these could be the ones responsible for wide dispersal of weed seeds.

3. Can the seeds be killed beforehand?

Weed seeds can be killed by heat. If the quantities of screenings used are not large, perhaps they could be baked in a hot oven before being set out at the feeding stations. Fumigating the screenings with methyl bromide or similar poisonous gases might destroy weed seed viability but since these fumes are dangerous to humans the work should not be attempted by an amateur.

4. Will there be a problem from the seeds that are not eaten?

At any feeding station there will always be a certain amount of scattering. If the weed seeds present in screenings are from such undesirables as stinging nettle, the ragweeds, or any poisonous plant, obviously to place those seeds in a bird feeding station would heighten the probability of those undesirable plants becoming established in the immediate area.

The above information will help you to decide, in consultation with your local seed Inspector, whether to use grain elevator screenings in your bird feeding stations and if so, whether some lots of screenings should either not be used or used only after being heated to kill all seeds present.



Photo by Rolf Sherick

The Stuck Duck

The above photo of a female American Widgeon, taken by Leader-Post photographer Rolf Sherick, appeared in The Leader-Post on May 6, 1966. Mr. Sherick, touring Wascana Bird Sanctuary for photos, found the duck firmly stuck among some willows. He took the duck to the Museum of Natural History to see if it was injured and then released it in the marsh.

CONCERN RE THE RED-TAILED HAWK

by **C. Stuart Houston**, Saskatoon

Seven nests of the Red-tailed Hawk were located this year in the Saskatoon area, and Lorne Scott located four at Indian Head. From these 11 nests, only 5 single young were raised from 5 nests and 6 nests were unsuccessful.

While the sample is too small to be statistically valid, one does worry about the fact that no nest raised more than one young (one of these nests had 3 eggs in May when climbed by Lorne Scott).

In the past, Red-tailed Hawks have done well in years when prey was plentiful—and these were years when the Great Horned Owl was also successful. In 1959 in the Yorkton area, the owls had a good year and of 10 Red-tailed Hawk nests, 8 raised 2

young and 2 raised 1 young to bandable size.

In 1960, the owls had an excellent year and the Red-tailed Hawks at Dubuc, Saltcoats, Stornoway and Yorkton did equally well: Four nests raised 3 young, 16 nests raised 4 young, and in 3 nests only 1 young was banded. K2

This year, the Great Horned Owl and Long-eared Owl have done very well and one would have expected the Red-tailed Hawk to do likewise. Are pesticides the answer? Are our Red-tailed Hawks gradually becoming infertile as has happened to the Golden Eagle in Scotland, the Osprey in New England and the Peregrine Falcons along the Hudson River? Further observations are obviously necessary.



The Yellow Lady's-slipper

Voldeng Studio photo, Prince Albert

YELLOW LADY'S-SLIPPER

Dr. R. W. Kirkby, 836 - 20th West, Prince Albert, sent in the accompanying photo of the Yellow Lady's-slipper and also a beautiful color photo of two flowers of this orchid on one stem. He found as many as 60 flowers on some plants.

Mr. J. Turnquist who sold his farm at Wallwort in 1965 moved one clump of Yellow Lady's-slipper in to Saskatoon where he had retired about ten years ago. He knew that the new owner was going to cultivate the area so he took a root and divided it and was pleased this year to see nine blooms on one of the plants.

Mrs. O. L. Wolters who has moved from Tolland to Edmonton where she works in the University hospital writes that the Yellow Lady's-slipper is still her prized possession. She obtained a plant by correspondence, from a *Blue Jay* member, "years ago". She has divided the plant many times. It grows in the gardens of many of her friends and last year she brought it to her rented garden in Edmonton where she has enjoyed 15 blooms in 1966. It is nice to be able to see this beautiful flower in our gardens but it is to be hoped that there will always be places in Saskatchewan where it can flourish in its natural setting.

HAREBELL OR BLUEBELL

by Keith F. Best, Experimental Farm
Swift Current

The bluebells of Scotland are not restricted to the land of the deep lochs and bonnie braes. It and many close relatives are found growing throughout North America. A member of the Bluebell Family, Harebell (*Campanula rotundifolia* L.) is a common plant throughout the Canadian prairies. A perennial, it grows from a rootstock to a height of 4 to 18 inches, often with many stems. The early basal leaves are very different from the narrow stem leaves, being rounded, with heart-shaped bases, giving rise to the specific name of *rotundifolia*. They are quite evident early in the season, but soon wither and disappear by flowering time.

The flowers are blue, campanulate (bell-shaped) and are from $\frac{5}{8}$ to $\frac{3}{4}$ inch long. Sometimes found singly, but generally occur in racemes of 3 to 4 flowers. The flowers have 5 united petals, 5 stamens, and 3 to 5 stigmas, while the fruit is an ovoid capsule containing many seeds.

Through time, the five once-separate petals have become fused together until the present solid bell-shaped structure resulted. This arrangement makes insect fertilization a much more certain process because none of the pollen is lost through openings between the petals, and because the visitor must enter the flower only at the vital point where the stigmas come in contact with his pollen-laden body. If cross-fertilization is not effected by the time the flower must wither, the stigmas, sticky on their under surface, bend downward and absorb whatever is left of the plant's own pollen at the base of the flower, thus insuring the production of seed by self-fertilization.





Mistocene

Photo by Miss Mabel Miller, Moose Jaw

MISTOCENE

by Deanna Derby, U. of S., Saskatoon

There is a massive four-hundred-ton boulder in this province which may be ear-marked for oblivion because it lies about a mile on the wrong side of the secondary (Summit) dam near Elbow, ninety miles south of Saskatoon. It may soon disappear under fifty feet of water—a casualty of the vast lake spawned by the main dam in the federal-provincial South Saskatchewan River Dam project nearing completion.

The rock, which squats like a giant buffalo facing west, is twenty-six feet across and stands fourteen feet high. In official language it is known as Aiktow Erratic, named for nearby Aiktow Creek (Kupsch, 1963). An erratic is a glacially deposited stone or boulder of unknown origin; this one is unusually large, although it is not the largest recorded in Saskatchewan.

To the Indians of this province, the rock is not of archeological interest but is of religious significance; in former years it was a Plains Cree shrine. Their story of the rock is as follows:

"Once a band of Indians were hunting buffalo when they saw an eagle approach from the north. It appeared to drop something that looked like a shiny buffalo. When they came closer to the strange buffalo, they discovered that it was this big rock. They could not find the huge eagle anywhere, and de-

ciding that this strange stone must have magical powers, they worshipped it."

Similar objects of veneration are found throughout the province, stretching from Kamsack through Young to Cudworth, at Outlook and at Elbow as well as at Rockhaven near Battleford where the boulder is still used as a shrine. The one near Elbow is among the biggest and most centrally located in this entire ceremonial complex.

"Mistocene", the name under which the Elbow boulder has received its recent publicity, is the Indian equivalent of "big rock". The rock has always had several names; in order to standardize reference to it, it was decided to choose the Indian translation of one of these which could be easily pronounced by an English tongue—"Mistocene", the "big rock", was the obvious choice.

Provincial and local support for preserving Mistocene by moving it to higher ground has been obtained. The federal government, which has 75% of the financial responsibility for the project which is endangering the rock, has been approached to assume a similar share (75%) of the cost of moving it. The question has been debated in Ottawa; the fate of Mistocene is still to be decided.

LITERATURE CITED

- Kupsch, W. O. 1963. Largest Erratic in Saskatchewan? *Blue Jay* 21:1. pp. 2-4.
 Pohorecky, Z. S. 1965. Saskatchewan Stonehenge. *Saskatchewan Archaeology Newsletter*, No. 12. pp. 5-7.

Junior Naturalists

Edited by **Joyce Deutscher**, 7200 6th Ave., Regina



Robin's Nest, by Mary Gillies, age 10, Unity

COMMENTS

The plea in the last issue of the *Blue Jay* for more letters from Juniors did not go unheeded. One Junior writes, "I read your appeal for more material . . . and although the only interesting stuff I have to write would probably be too long, I decided to try to write some things down which I hope are worthy of printing."

Jackie Willerth and Rosemary Nemeth both mention adult members of the S.N.H.S. who have helped them with their interest in nature; while Rose McLaughlin adds a footnote to Peter's letter saying that she "squeezed" the story out of him when he practically had one foot on an aeroplane bound for Ireland!

It appears that a little encouragement and even some "squeezing" at the right time often does wonders in helping to create and develop a young person's interest in natural history and in giving him the incentive to write and tell others about it. And Juniors, if there isn't an interested adult around to encourage, threaten, goad or squeeze you into writing do not hesitate to try your hand at it all by yourself. Who knows your letter might appear in print in the *Blue Jay*.

LETTERS, SKETCHES, PHOTOS NEEDED

Juniors are reminded to get their contributions in for the next issue by October 15. Send them to Mrs. Joyce Deutscher, 7200 6th Ave., Regina and let us hear from more of you about your nature observations. Remember that letters about any form of wild life including birds, mammals, insects and plants are welcome. Original sketches (not ones copied from other pictures) are also wanted. Sketches should be done in black and white and should have some dark well defined lines so that they will reproduce well. Good clear photographs of plant and animal life can be used.

BANDING HORNED OWLS

by **Rosemary Nemeth**, age 10, Yellow Creek

We left at three in the afternoon on May 14, 1966. The first nest we found had three baby owls in it. For food there were three pocket gophers and one Long-eared Owl.

The second nest had two baby owls in it. In the nest there were two mud hens (American Coots) and one barn rat.

The third nest had three baby owls. Dr. Houston banded two of them. The third baby's leg was too small for the band. There were four pocket gophers for food.

FIRST AID FOR A GROSBEAK

by Jackie Willerth, age 11, Indian Head

On March 19, 1966, I came across a bird with a broken wing. My neighbor, Mrs. M. Skinner of the S.N.H.S., identified it as a female Pine Grosbeak. Our doctor put splints on it twice because "Tweet", as I called her, thought it shouldn't be there and kept pulling it out.

I only had a makeshift cage of a cardboard box with a wire screen in front fastened with four shingle nails. It had three perches. I realized afterwards a cage would have been ideal as I think she would have been more quiet if she could have seen all around her. However after ten days she became used to us.

Her diet was bird seed and raisins. Later I hung a spray of millet from the clothes line. She loved apple, celery and lettuce.

After two weeks she sang heartily with the radio, record player and even with the vacuum cleaner. After a month I let her out of the box and she began trying her wings. The first week she made flights about three feet in height, then she began making longer flights. She was very careful of window panes I noticed. Sometimes she played possum and my sister and I had fun trying to find her. She loved her daily bath in a small dish of water.

We would have liked to keep her, but on April 30 we took her to the coulee to a high tree. I can still hear that melodious "tweet" as she flitted from branch to branch. That week we still had two flocks of Evening Grosbeaks about the farm. So I hope the cousins helped Tweet out. It is indeed a worthwhile thrill to look after such a bird.

"FUGI" THE ROBIN

by Feter Carton, age 11, Indian Head

On June 14 I rescued a baby robin which was being chased by a dog. I quickly made a makeshift cage out of a box and a window screen. My brother and I fed him some worms but he didn't eat. Mother suggested pabulum so I fed him pabulum with an eye-dropper and he liked it. Before I went

to bed I fed him again. I thought he wouldn't live but the next morning I heard chirping so I fed him some more pabulum. This went on for five days and then he began looking sick. Mom bought cat food the next day and we fed that to him. From then on it was his main food.

Dad and I built a new cage out of window screen. After another week we let him go and he is still as tame as ever in the yard.

OUTSIDE MY WINDOW

by Mary Gillies, age 10, Unity

Just outside my bedroom window there is a tree with a robin's nest in it. All spring I watched the robin family. At first there were four blue eggs in the nest. Next there were four ugly naked brown birds. It was a pleasure to watch them grow and watch them being fed.

Later on in June feathers grew on their naked bodies. Soon they flew away.

At our summer cottage I watched a wren family too.

DUCK NESTS

by Kevin Van Tighem

This spring I found three duck nests. On May 7 I found a Pintail nest about twenty-five yards off the east shore of Frank Lake. It contained two eggs and was only two feet from last year's duck nest which contained five eggs.

On May 15, returning from the area around Beaverhills Lake, Wayne Smith and I found a Mallard nest near the campground just north of Morningside. The nest was about twenty-five yards in a dense spruce bog where the trees were about two feet apart. The hen Mallard flushed from her nest at the foot of a spruce and we saw that the nest contained two eggs. The nest was more than a mile from the nearest water.

On June 4 I found the strangest nest of all. At Inglewood Bird Sanctuary in Calgary I flushed a hen Mallard from her nest in some dogwood. When I looked in the nest I saw that it contained seven eggs and a coca-cola bottle. Apparently the duck had built her nest right over the bottle.

The Blue Jay Bookshelf

BIRDS OF NORTH AMERICA—A GUIDE TO FIELD IDENTIFICATION. By Chandler S. Robbins, Bertel Braun, and Herbert S. Zim. Illustrated by Arthur Singer. 1966. Golden Press, Inc., New York, N.Y. 340 pages. (7½" x 4½"). \$2.95 (U.S.).

Good field guides to birding, on this continent, have been available for some time. Indeed, for almost 20 years, the identification of birds in the field has been greatly simplified by the Peterson series of field guides and Pough's Audubon bird guides. The principle of emphasizing characters recognizable in the field, on which these books are based, is now taken so much for granted that we do not realize how much more difficult it was a generation ago for the ordinary bird watcher to identify an unfamiliar bird. Nevertheless, every birder greets with curiosity a new bird guide that covers his area. Now, in the popular Golden Guide series, there has appeared a Golden field guide to the birds, prepared by an imposing team of experts—Chandler S. Robbins, Chief of the Migratory Non-game Bird Studies Section of the Bureau of Sports Fisheries and Wildlife (U.S.A.), and familiar to *Blue Jay* readers who submit migration records, for his work at the Patuxent Refuge; Bertel Braun, an enthusiastic European amateur ornithologist and bird bander, now working on a popular guide to the birds of Europe; and Herbert S. Zim, editor of the popular, educational science series of Golden books, and editor of Oliver Austin's *Birds of the World*. The artist responsible for the many hundreds of coloured illustrations of birds in this new field guide—birds in characteristic poses in their typical habitat, birds in flight, birds in silhouette, is Arthur Singer, acclaimed as one of today's foremost painters of birds, who has produced, for example, the illustrations for *Birds of the World*.

The authors point out that this book "attempts to compress basic

identification data into a single pocket-size volume . . . an effort to improve the ease and accuracy of field identification for the amateur as a first step toward behavioral, ecological, and other studies of birds." This commendable statement shows the respect which these dedicated ornithologists have for the work of the amateur, work which may go far beyond simple listing of new birds seen.

The new Golden guide covers all species of wild birds likely to be found north of Mexico, considering them in three groups—breeding birds, regular visitors, and casual visitors (that is, by the authors' definition, occasional migrants of which there are at least five North American records for the present century, e.g., the Corn Crake and Lapwing from Europe). For us in the Great Central Plains, this one volume happily combines land and water birds from both eastern and western North America.

The following aims, although not all explicitly stated, seem to have been of primary concern in the production of the guide:

1. To make available at a modest price a guide to all of the birds on this continent north of Mexico *completely* illustrated in colour, and in suitable pocket format (soft, but rugged cover; price, \$2.95).
2. To call attention to characteristic postures as an aid to identification. (The key picture of many birds shows them in typical pose in their usual habitat, or often in characteristic movement; for example, Sprague's Pipit is pictured walking through the grass, Sanderlings running along a sandy beach, and hummingbirds sipping from flower-throats).
3. To provide scientific descriptions of the birds' songs. (This is done, for the first time in a field guide, by means of "sonagrams." The sonagram is a visual reproduction of a sound pattern, electronically made by a sound spectrograph. The diagrams in

this book are photographs of sonagrams, most of them from recordings made in the field by Chandler Robbins. Basically, the graph shows the variations in frequency and pitch that characterize each bird's song. To many bird watchers, this incursion into the mysterious world of electronics may seem formidable; in any case, it looks as if one would have to spend a little time becoming familiar with the system before finding it useful.)

4. To make simultaneously available, once the field guide is opened at the correct page, all the information needed (or provided) for bird identification and understanding—textual description, coloured illustration, and indication of range. (This is done most ingeniously: short texts describing each of several species of birds appear on the left hand page, each accompanied by a small map of North America indicating the distribution of the species, and on the right hand page coloured illustrations of the species appear in the same order, exactly opposite each textual description.)

The authors' own experience of birding in the field has made them especially conscious of the practical requirements of a bird guide. Hence the distribution maps by which range is immediately indicated, the length measurements given in terms of field measurements of live birds rather than of study skins, the full-page colour plates that help to elucidate difficulties of identification (two pages of female ducks in flight, two of hawks in flight, two of the winter plumage of smaller shorebirds, two of immature gulls, two of the head markings of wood warblers, two of immature fall warblers, two of the head and breast markings of sparrows), and the silhouettes used to indicate family types. Sometimes, however, the technical execution of the idea is not adequate, as for example in the colour coding of the map of North America showing vegetative regions, where there is a poor correspondence between the chart colours and the area colours (at least

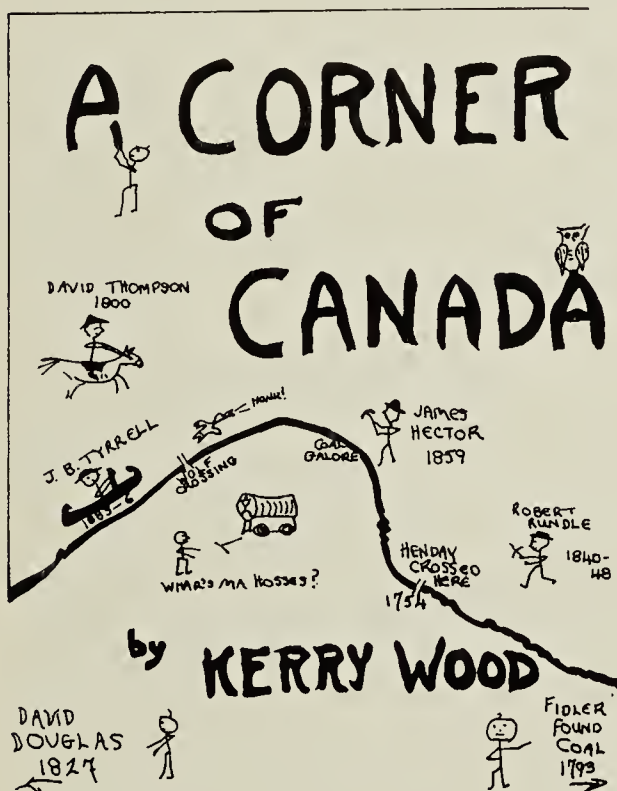
in the copy I examined). Again, in some of the very small coloured sketches the essential character of the bird is lost—for example, in a little sketch of kingbirds attacking a crow, neither the kingbirds nor the crow are recognizable.

Sometimes, of course, the very terseness of a statement in words or in paint can be misleading. A Great Crested Flycatcher is sketched nesting in a mailbox—are we to think of this species as following civilization like the Starling? The Burrowing Owl is said to be the "owl of the plains, locally common, usually nesting in prairie dog 'towns'", but this does not tell the whole story of its distribution. On the whole, however, a most commendable effort has been made to place each bird in its proper setting. The authors keep insisting that we do not simply look for pin-pointed field marks, but that we try to see the whole bird in its appropriate environment. This is indeed one of the pleasurable features of the Golden guide.

One aspect of this really quite scientific guide will be a surprise to many. The common and scientific names are from the A.O.U. *Check-list of North American birds*, 5th edition, 1957, but the order in which the species are listed does not follow the *Check-list* exactly. The authors explain that their guide follows the usual "natural" or evolutionary order, i.e., progressing generally from the least to the more advanced families of birds, *with minor departures to set up comparisons*. For example, all the white herons are grouped together, and all herons have been placed next to the cranes, thus facilitating comparison and identification of somewhat similar, though unrelated, birds. Within the families, too, the A.O.U. *Check-list* order is not necessarily followed: for example, among the grebes, the Western comes first; the sandpipers begin with the Long-billed Curlew, Whimbrel, Eskimo Curlew, Marbled Godwit, Hudsonian Godwit, Bar-tailed Godwit, then proceed to an arbitrary group of "upland sandpipers", namely, Upland Plover, Buff-

breasted Sandpiper, Solitary Sandpiper, Spotted Sandpiper and Wandering Tattler, then to "medium-sized waders", "rock shorebirds", "peeps" and "phalaropes." These departures from the usual *Check-list* order are mainly arbitrary re-arrangements designed as aids to identification and understanding, and there is certainly merit for many of them (though the Western Grebe placement still puzzles us). However, inasmuch as most local check-lists follow the A.O.U. *Check-list* order (as do the Peterson and Pough bird guides), this will cause some confusion and will involve a little more effort in making cross-references from this new field guide to other books and lists.

An examination of this newest field guide to birds, with its several distinctive features, makes one eager to get out to "field-check" it.—*Margaret Belcher, Regina.*



A CORNER OF CANADA. By Kerry Wood. 1966. John D. McArthur Ltd., Calgary. (Autographed copies are available from the author, Box 122, Red Deer, Alberta, Canada at \$3.00 a copy).

Readers who have joined Kerry Wood on previous adventures in the

Red Deer country of Alberta will find more delightful tales and reminiscences awaiting them in his Centennial project, *A Corner of Canada*.

Kerry Wood arrived in Red Deer in the year 1918 with all the enthusiasm of most young lads and with a much greater curiosity about his surroundings and the colourful neighbourhood personalities which he met. This curiosity soon led him to adventures and observations which will delight the naturalist, the historian and the young-in-heart who can still join in on long rambles and share the joy of the "high-sky jingle of a Sprague's pipit song".

Have you ever had the thrill of finding a dinosaur fossil such as you could find along the bed of the Red Deer River or found the nest of a peregrine falcon as your boat took a turn between steep banks? Have you ever been a member of a local secret society or had the problem of cooking five hundred pounds of beef in a pit? If you have not been so fortunate, I would recommend that you try these adventures with Kerry Wood.

This story is almost as good as a personal introduction to Mr. Wood, his family and the country that he knows and describes so well. Perhaps when you have finished this book you will want to make your Centennial project a visit to this corner of Canada.—*B. M. Rever, Biology Dept., U. of S., Saskatoon.*

AMPHIBIANS AND REPTILES OF SASKATCHEWAN. By Francis R. Cook. 1966. Sask. Museum of Natural History, Popular Series No. 13, Regina, Sask. 40 p. Illus. \$0.40.

AMPHIBIANS AND REPTILES OF SASKATCHEWAN is a booklet designed to provide a non-technical guide to the 19 species of amphibians and reptiles of the province. Mr. Cook, who is Curator of Herpetology at the National Museum of Canada, has spent several years conducting a survey in the prairie provinces of these often neglected members of our fauna and is particularly well qualified to discuss them.

Each species is illustrated and given a separate account. The black and white illustrations, from meticulously prepared water color paintings by Ralph Carson and Fred Lahrman, add considerably to the text. The account for each species is divided into four sections: Recognition—in which the distinguishing characteristics of the species are described; Comparisons—where contrasting characters are given for species which might be confused with the one under discussion; Range in Saskatchewan—in which the known distribution in Saskatchewan is given; and Natural History—where interesting data on life histories, habitats, etc., are briefly presented. In addition there is information on amphibians and reptiles in general, conservation, and methods of collecting and preserving specimens for scientific study.

The booklet is authoritative and easy to use. It is a welcome addition to the natural history literature of the province. A heavier cover would have made it more durable for use in the field, and it should be included on any field trips take in Saskatchewan. —*W. H. Beck, Regina.*

THE LEGEND OF GRIZZLY ADAMS. By Richard Dillon. 1966. Coward McCann Inc., New York. 223 pages. Illustrated in black and white. Cloth, \$5.00.

Grizzly Adams has been called the most famous of the mountain men and is frequently referred to by American writers for his adventures and colorful character. Mr. Dillon, who is the librarian of the Sutro Library in San Francisco, has produced an interesting, well written book which gives the reader the background story of this man of the wilderness. Grizzly Adams was one of the many New Englanders who learned a trade in the Eastern States and then "went West" to try his luck in the wilderness, which was then most of California. Adams was bankrupt on a number of occasions and decided that he liked life in the bush much more than living in the towns, and so he lived on his own or with the Indians in the Sierra Nevada

and other parts of the coastal mountains. He took a particular interest in killing or capturing grizzly bears, from which he got his nickname. Apart from killing many by shooting them with a single shot rifle or Colt revolver, he frequently stabbed them to death, though getting bitten in the process; such an experience caused his death. Mr. Dillon points out that his stories, and the number of times that he was at death's door with a grizzly, wolf or cougar at his throat make any reader wonder if some myth might remain in the legend.

Grizzly Adams' reputation rested upon his wild adventures, his many animals, and his appearance. He was instrumental in establishing the San Francisco and New York zoos, and his grizzly bears were a popular sight, as were the rest of his menagerie of cougars, wolves, elk and other animals which he had tamed. He helped to interest the public of Pre-Civil-War America in natural history, and stories of Indians, coastal mountains and the Gold Rush era are all side-lights which add to the incidents. By going West, Grizzly Adams made a niche for himself in history and his wilderness adventures will always be remembered and recalled.—*Tom White, 1-2105 Cornwall, Regina.*

BENEFACTOR DIES

Dr. C. M. Goethe, Sacramento, California, who had given us frequent donations which he always referred to as "a widow's mite" died recently at the age of 91. Dr. Goethe and his wife spent most of their lives and considerable money in philanthropic work. Dr. Goethe is credited with starting the first playgrounds in the United States. He was an enthusiastic conservationist, starting a nature guide system in the national parks, and scattering millions of poppy seeds along roads and railways in an attempt to keep California beautiful. He wrote regularly to officers of the S.N.H.S. praising the *Blue Jay* and encouraging us to greater efforts in conservation. It is with regret that we note the passing of this great friend of man and nature.

CAMPING DAYS

I was perfectly happy, content as could be,
Till a Baltimore oriole carolled to me,
“Get up, Mrs. Brucks, come on, now, Arise,
There are hundreds of beautiful birds in the skies.”

The air was still chilly, so I lingered a bit
But he whistled and warbled, “Mrs. Brucks, get up quick!”
So I left my warm bed, and outside I went,
Leaving Bill and the children asleep in the tent.

What a lovely surprise he had planned for me,
For a dear little hummingbird sat in a tree;
He twittered and hovered and turned round and round
And called to his mate to come up from the ground.

She joined him there for a second or two
Then back to her well-hidden nest she flew;
A kingbird flew by and a goldfinch and wren
A flicker, some waxwings, a warbler, and then—

From a bush right beside me I distinctly heard “meow”
And a sleek little catbird sat there on a bough.
From a hole in the ground, right next to my feet
Two bright eyes looked out for a nice breakfast treat;

Then a paw came out slowly and swept in some grass
But seeing me there, he disappeared fast.
A chipmunk or two scurried by in the leaves
Then a bird came so close, I scarcely could breathe:

’Twas the hummingbird back with his long slender bill
And his beautiful plumage! It was really a thrill.
Two blackbirds were trying to win as their mate
A sly little female so trim and sedate;

When they hopped up beside her, she quickly moved on,
And paid no attention to the amorous song.
Then a robin sailed by them and lit in a tree
And sang to the suitors, “Cheer up, Look! It’s me!”

Filled with wonder, I watched in the woods all the day
Enjoying God’s beautiful creatures at play,
And I joined with the family for worship and prayer
As the song of the oriole still filled the air.

Notes from Letters

PORCUPINE USURPS ACTIVE CROW NEST

Upon checking a Common Crow nest in the evening of June 2, 1966, I was amazed to find a Porcupine sitting inside the nest. There had been four young in the nest at the time. The porcupine was sleeping when I first saw him but soon he woke up when the adult crows started making a commotion at my approach. The porcupine disregarded my intrusion as well as the commotion of the crows and it appeared that the animal was planning to spend a night in the nest. I moved away from the nest site, but about an hour later I came back to see if the porcupine was still in the nest. It was sleeping in the nest. I visited the nest the next day and found that the four young crows were dead. The porcupine had apparently spent the night on the young crows, thus smothering them.—*Bohdan Pylypec*, Box 134, Yellow Creek, Saskatchewan.

CANADA GOOSE NESTS ON ROOF OF HEN HOUSE

We have a wild Canada Goose that has stayed with us for five years, summer and winter, and every year she lays and sets on top of our chicken house which has a sod roof. Last year in early spring the tame gander was killed by a coyote, so the goose didn't

hatch any young. However, this year a wild gander came and mated with her and she has now [June 8, 1966] hatched four young. We have one of her half-wild young that is two years old; this year she laid and hatched young. We are very pleased to have these birds so tame and staying with our own tame geese. Enclosed is a snap of them on top of the hen house, where she laid and set in the old tire put there for her. The half-wild goose set in a box hung on the side of the granary (previously hung for a turkey nest) with a plank to walk over on from the hen house.—*Mrs. Pansy White*, Box 896, Maple Creek, Sask.

TWO-HEADED DEER MOUSE



Photo copyright by H. H. Pittman

This is the picture of a two-headed Deer Mouse which was killed near Wauchope by a cat.—*H. H. Pittman*, Wauchope, Sask.



EVENING GROSBEAKS

In the town of Kelvington there is a flock of Evening Grosbeaks (*Hesperiphona vespertina*) numbering nearly three hundred individuals in the winter of 1965-66. The flock is the

result of a feeding and protection project begun 15 years ago by Mr. and Mrs. Bob Fraser. It started when Mr. Fraser set out sunflower seeds for two or three grosbeaks which visited his yard, and mushroomed until during the winter of 1964-65 nearly four hundred birds were fed 3000 pounds of sunflower seeds. The birds feed best during cold, clear, crisp days rather than on dull, cloudy, warm days.

Evening Grosbeaks are aggressive birds, perhaps best described in Mrs. Fraser's words: "They are scrappy and greedy. For every two of the little devils at least one is a bully!"

The flock seems to follow a regular daily schedule in its winter visits to the Fraser's home. At one time the flock arrived from the roosting ground, which is thought to be in a spruce swamp a short distance north of town, at about 10:00 a.m. and left before 4:00 p.m. Now, however, they arrive at 8:00 a.m. and remain until nearly 5:30 p.m. Before returning to the roosting ground the birds cease feeding, there is a noticeable lull in their noisy cries, and they move to the tops of the trees.

The grosbeaks leave for the summer to nest, it is assumed, along the Pipestone Creek a few miles northwest of Kelvington. The first individuals depart after the last severe spring snow storm. The latest recorded departure date was June 19, 1964. This year one pair remained and nested in a Scotch pine at the Fraser home. The birds return by mid or late October.—*David N. Ashdown, Box 31, Okla, Sask.*



UNUSUAL MOUNTAIN BLUEBIRD NESTING BEHAVIOUR

In the spring of 1966 I attached a bluebird nest-box to a fence surrounding our garden in an open locality. A pair of Mountain Bluebirds soon claimed the birdhouse and on April 21 began carrying pieces of grass for their nest. At first the grass was piled in a disorderly fashion but later two holes were made in the pile of grass. It appeared that the bluebirds were planning to build two nests, one on either side of the birdhouse. The bluebirds kept bringing in grass, shaping both nests until a lining was all that was needed in the nests. The nests were then lined with feathers, shreds of dry bark and some horsehair. By May 18 both nests were completed.

On that day an egg was laid in one of the nests. Five more eggs were laid later. The eggs were incubated and by June 6, six young emerged from the eggs. On June 14 only two young were in the nest. There were no traces of the other four young. They had probably died due to a long spell of cold, wet weather and were then removed from the nest by the parents. The two young survived and on June 27, they moved to the second nest. The next day they left the nest-box.

The adult bluebirds then prepared for a second brood. They removed the old linings and brought in new linings. On July 4 an egg was laid in the same nest as previously. Three more eggs were laid later. However, the only time I saw the other nest being used was when the two young had sat in it for a while. Why then did the bluebirds build two nests? — *Bohdan Pylypec, Box 134, Yellow Creek, Saskatchewan.*

IMPALED BAT

In the last issue of the *Blue Jay* (Vol. 24:2) there are four instances of birds getting entangled on objects—accidents of flight which are not really too unusual. What is unusual is to find a bat so entangled. However, I did once find a silver-haired bat impaled through the wing on a branch of a scrub. I wondered if the sonar and radar abilities of the bat are always able to prevent collisions.



Photo by Robert R. Taylor

Wapiti at Richardson, 4 miles southeast of Regina, July 1, 1966

TAX FREE

A letter from the Department of National Revenue, Taxation Division, Ottawa, to the secretary of the Saskatchewan Natural History Society tells us that the Society is recognized as a charitable organization within the meaning of Section 62 (1) (e) of the Income Tax Act for the 1966 taxation year. Accordingly donations made during the current year (evidenced by receipt) will be deductible by donors in computing their taxable income. Application for this privilege must be made again in 1967.



Photo by Helen Morrison

Betty MacGregor and Elisabeth Wagner at the summer meeting, June, 1966

1966 CHRISTMAS CARD

A beautiful Doug Gilroy Kodachrome, "Hawthorn Berries on Snow", approved at the Summer Meeting is our Christmas card for 1966. The cards are 4 x 5 inches, simple fold, with greeting. They are in color. Price is \$1.00 per dozen with envelopes (Sask. residents \$1.04). There are also some Christmas cards showing the Bohemian Waxwing (Cy Hampson) and Downy Woodpecker (Ruth Tempel) each at \$1.04 per dozen. The Boreal Chickadee (Ralph Carson) card is available as a hasti-note only.

Books on natural history are also available at the *Blue Jay* bookshop. Get your Christmas orders in early. Order through the *Blue Jay* bookshop, Box 1121, Regina.

ANNUAL MEETING

The Saskatchewan Natural History Society holds its annual meeting this year in the attractive Museum of Natural History in Regina. There will be registration and an informal social hour or two Friday evening and then business and entertainment sessions all day Saturday. There will be a guest speaker Saturday evening. Program details may be obtained by writing to Box 1121, Regina. Send in your suggestions for resolutions and for officers and plan to attend the annual meeting, October 15, 1966.

THE SASKATCHEWAN NATURAL HISTORY SOCIETY

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THE BLUE JAY

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All articles and letters for publication should be submitted to George F. Ledingham, Acting Editor, 2335 Athol Street, Regina.

MEMBERSHIPS

The classes of memberships in the Saskatchewan Natural History Society are as follows: *Regular*, \$2.00; *Supporting*, \$3.00; *Sustaining*, \$5.00; *Junior* (including schools), \$1.00. The *Blue Jay* and *Newsletter* are sent without charge to all members not in arrears for dues.

Send all renewals and new memberships to Frank Brazier, Treasurer, SNHS, Box 1121, Regina, Sask.

REPRINTS

Requests for quantities of reprints of any article printed in the *Blue Jay* should be sent to Printcraft Ltd., Regina, Sask., within one month of publication. Contributors wishing a few extra copies of the current *Blue Jay* may get them at cost. Requests for these should be made to the Editor when material is submitted for publication.

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